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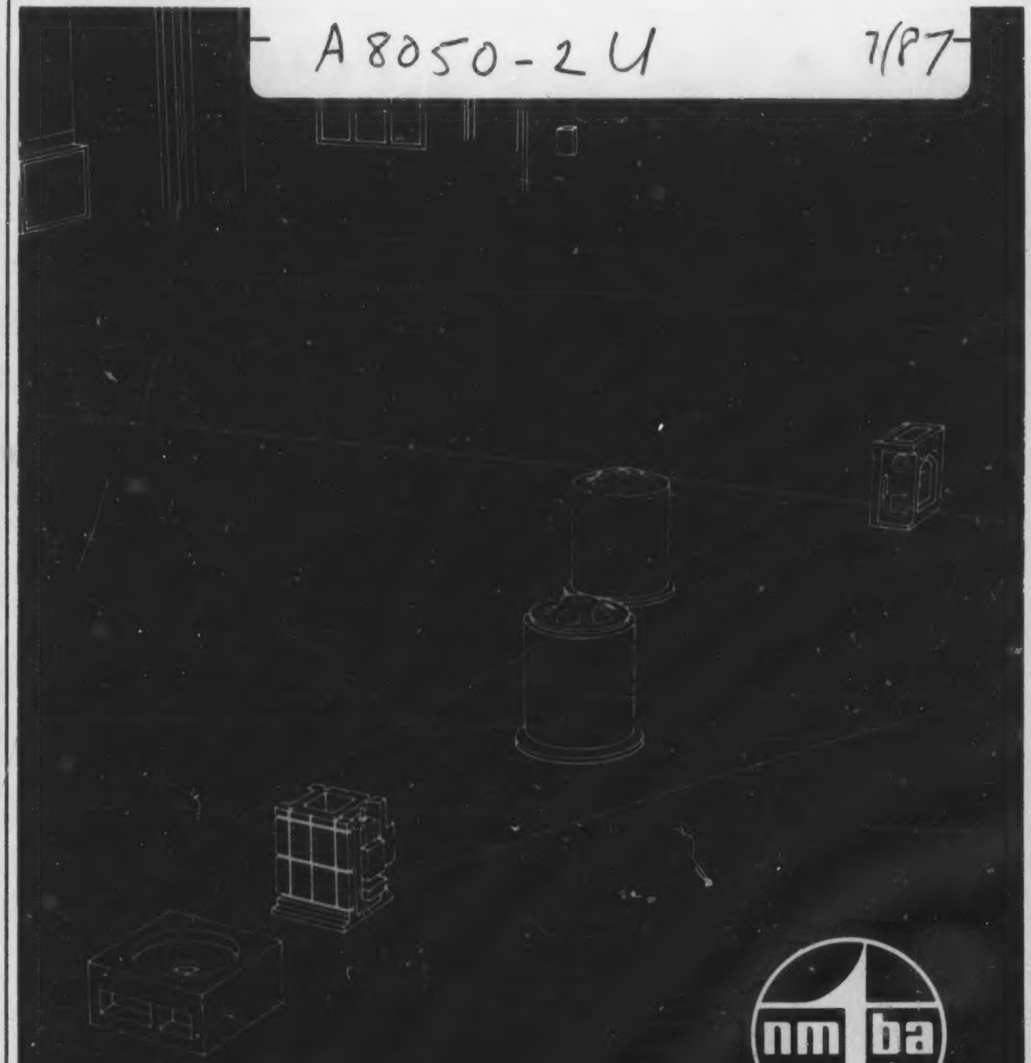

THE ECONOMIC HANDBOOK OF THE MACHINE TOOL INDUSTRY

1986-87

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1986-1987 Economic Handbook of the Machine Tool Industry

Compiled by the Statistical Department

National Machine Tool Builders' Association
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FORWARD

For the U.S. machine tool industry 1985 was a year of mixed signals. Shipments of new machine tools by U.S. builders were $2.7 billion, a level 14% above the 1984 total. Orders, however, experienced a reversal. After totaling $2.9 billion in 1984, net new orders in 1985 were $2.5 billion, a 13% decline.

These statistics can be put into perspective by comparing them to the situation in the industry just five years ago. In 1980, industry orders totaled $4.8 billion while shipments for the year were $4.7% billion. The fact that 1985 orders and shipments were 53% and 57%, respectively, of their 1980 levels speaks eloquently for the state of the industry today. While the industry has recovered from the depths of the 1983 recession, it has not yet regained the vitality it enjoyed in the late 1970s and early 1980s.

The first half of 1986 has followed the trends established in 1985. Orders have weakened by 11% from the same period a year ago while shipments, reflective of the strength of orders in early 1985, are 20% above their 1985 six month pace. The current outlook for the rest of 1986 is troubling. With the economy's growth slowing and other macroeconomic indicators showing little or no positive momentum, the factors that could lead to a significant upswing for the machine tool industry during the remainder of 1986 are not in evidence. Instead, it appears that the industry will continue to fall victim to the forces that have kept it from enjoying a fully recovery from recent recession-induced lows.

One of the most important of these has been the decline of U.S. manufacturers' competitiveness vis-a-vis their foreign counterparts and a concurrent decline in their need for new machine tools. As a joint result of the high value of the dollar over the past few years and a domestic tax code that discourages investment in productive assets, America's manufacturers are becoming increasingly "hollow" corporations—assemblers of components and products purchased overseas with little actual production taking place in the U.S.

This sort of activity has led to a significant decline in manufacturing's share of the domestic economy. Because "Made in U.S.A." now frequently means assembled from foreign-sourced components, there has been a decline in the domestic production of all the myriad industrial commodities, components and types of equipment used in manufacturing. Machine tools in particular have seen their market dwindle.

While the import of industrial components has had an adverse impact upon U.S. manufacturers' demand for machine tools , the U.S. machine tool industry itself is faced with a severe import challenge. Just five years ago imports of foreign machine tools totaled $1.3 billion and represented 23% of the domestic market. Since then, the import tide has continued virtually unabated. In 1985 imports of foreign built machine tools totaled $1.7 billion and constituted 41% of domestic machine tool consumption. If early 1986 trends continue, the import total for the year could exceed $2.2 billion, a level that would send the import share to over 50% of the market for the first time in the industry's history.

As we look beyond our current situation into the next decade and beyond, we feel that the machine tool industry will be called upon to play an even more vital role in America's

industrial structure. Since the turn of the century, and especially in the post-World War II era, the United States has undergone a dramatic shift in its economy away from agriculture and manufacturing toward service industries. This has placed a responsibility on each farmer to produce more food to feed our expanding population and has placed an equivalent burden on each industrial employee to produce an ever larger volume of manufactured goods for each member of our society.

Just as mechanization was the answer to the problem of farm productivity, new and better capital equipment is the answer to the problem of industrial productivity. The machine tool industry looks forward to the technological challenge of obtaining more output from each manufacturing worker as it continues to provide its customers the world's most reliable, most productive machine tools.

The 18th edition of the Economic Handbook again offers industry executives, market researchers, legislators, administrators and students an expanded collection of data on the economy and the machine tool industry.

Wide fluctuations in currency values and varied definitions for different time periods account for occasional differences in the data for what appear to be identical subjects in the Handook. As much as possible, these differences are explained in the chapter introductions, footnotes and the "Explanation of Terms" section at the end of the Handbook. Special explanatory notes for selected data series are also included. The NMTBA Statistical Department is also available to answer any questions concerning this publication. We are constantly trying to improve the value of this book. Your comments and suggestions for future editions are welcome.

James Gray

James A. Gray
President

August 15, 1986

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Contents

1 National Economy and Machine Tools 1

2 World Economy 43

3 U.S. Machine Tool Industry 59

4 U.S. Machine Tool Shipments and Orders 75

5 U.S. Machine Tool Foreign Trade 121

6 World Machine Tool Industry 161

7 Employment and Earnings 241

8 Finance 257

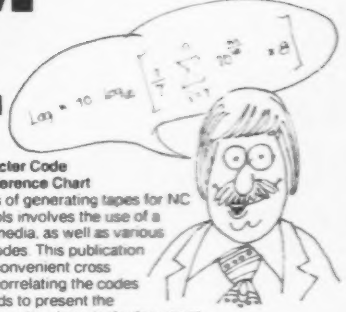
9 Machine Tools in Use 265

Abbreviations ii

Explanation of Terms iii

Index xvii

TECHNICALLY SPEAKING...



NMTBA offers a series of nine technical publications that contain suggestions, guidelines and information to make your company's operation more efficient and productive.

1 Guidelines for the Measurement of Machine Tool Utilization
This publication suggests a uniform procedure for the measurement and reporting of machine tool utilization. It provides a system to measure the effectiveness of a wide variety of machines and their related resources. It establishes indices of production, availability, utilization and consistent methods for their evaluation.

2 Noise Measurement Techniques
This publication suggests the most recent measuring techniques and procedures for the determination of machine tool sound. A discussion of time-weighted average sound levels is included, as well as a discussion of the disagreement between OSHA and EPA as to the basis for computing noise dosage.

3 Definition and Evaluation of Accuracy and Repeatability of NC Machine Tools
This publication was prepared to help develop a better understanding of the accuracy and repeatability of numerically controlled machine tools. Definitions, methods of computation and testing procedures are thoroughly discussed. This paper is recognized in the COCOM (Coordinating Committee) Regulations which govern the export licensing of NC machine tools.

4 Common Words As They Relate to NC Software
The aim of this publication is to improve communication among those involved with NC computer software. It defines the common terms used throughout the industry including those regarding the preparation and use of computer software for numerically controlled machine tools.

5 NC Character Code Cross Reference Chart
The process of generating tapes for NC machine tools involves the use of a number of media, as well as various character codes. This publication provides a convenient cross reference, correlating the codes and standards to present the needed information in a single document.

6 Standards Index
A bibliography of standards pertinent to the design, manufacture, sale and use of machine tools.

7 Selecting an Appropriate NC Programming Method
Selecting the best NC programming method for a particular set of manufacturing circumstances is an important decision for new and established NC shops alike. The implications of this decision are manifold and an incorrect decision can adversely affect the expected return on high cost capital equipment. This publication explains the elements of manual and computer-aided programming and will help you in selecting the right method for your shop.

8 NC is EZ
This publication is intended as a practical and easy to understand NC primer. It will help prospective first-time NC users plan and execute the installation and start-up of new equipment with a minimum of difficulty.

9 NC Part Programming Profile and Summary Report
This survey and summary report provides data useful to companies to compare their own NC programming efforts with other shops having a similar number of NC machines. It puts in proper perspective the NC programming effort required at shops considering acquisitions – perhaps first-time – of machine tools.

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1

NATIONAL ECONOMY AND MACHINE TOOLS

Man is a tool-making animal. Since the beginning of history man has used his tools to make even better tools. The culmination of these efforts are today's modern machine tools. These are the machines that form the basis of much of our modern civilization.

A machine tool is a power-driven machine, not hand held, that is used to cut, form, or shape metal. Few, if any, products and services of an industrialized country would exist were it not for machine tools. There would be no trains, no ships, no planes, no cars. There would be no power plants, no electric lights, no refrigerators, or other electrical appliances. And, without agricultural machines, without modern transportation, and without refrigeration–all dependent on modern machine tools–there would be no way to feed the more than 220 million people in this country.

Yet, such is the efficiency and longevity of the products of the machine tool industry that its present production has always represented only a small part of the nation's total output. The entire U.S. machine tool industry is smaller than many individual corporations. Even the limited data available for the first years of this century show, for instance, that metalcutting machine tools shipments made up only slightly more than 10 cents of every $100 in goods and services produced. In 1985, shipments of complete machine tools made up just over 6 cents of every $100 of Gross National Product.

Comparisons of machine tool consumption with capital expenditures by durable goods manufacturing industries show that machine tools make up a comparatively small but significant part of total expenditures for plant, machinery, and other equipment.

Machine tools are typically installed as capital equipment in metalworking industries. The data on machine tools installed in U.S. plants (see Chapter 9) and data collected by NMTBA indicate that the major users of machine tools are the metalworking industries: fabricated metal products, machinery, and transportation equipment (among the latter, primarily the automobile and aerospace industries). Thus, this chapter focuses on private investment, on expenditures for new plant and equipment, and on the orders and shipments of the metalworking industries. Business activity in these industries is likely to affect their capital expenditures and, in turn, to affect the orders that flow to the machine tool industry. However, many other factors also seem to affect the ordering of new machine tools.

The machine tool industry is highly sensitive to the treatment of corporate capital consumption allowances such as investment tax credits and depreciation. Changes in these affect the willingness and ability of the industry's customers to make machine tool purchases. The work of many students of the machine tool industry has indicated that corporate profitability, financial conditions, and the general level of business confidence are also important determinants of machine tool order activity.

Capacity utilization is recognized as another significant determinant of future business investment in plant equipment and thus in machine tools. While attempts to measure the utilization in a broad spectrum of industries are fairly recent, there are several existing series on capacity utilization in manufacturing. In this issue, three of the available measures are presented. Also included is a capacity utilization series for selected machine tool consuming industries as published by the McGraw-Hill Publications Company.

Currently, there is much concern in the United States about the erosion of our capital stock. For instance, studies have shown that the average age of the machine tool population in this country has gone up significantly since the 1950s. Investment apparently has not kept up with the need to replace aging capital assets in U.S. metalworking industries. Several tables showing the stock of capital assets in various machine tool consuming industries are in this chapter. Of particular interest are the tables relating purchases and depreciation of capital goods in manufacturing industries, and the tables of business capital appropriations in current and constant dollars.

Many figures shown in this chapter are in current dollars . . . dollars not adjusted for changes in purchasing power. Overall changes in the purchasing power of the dollar, as measured by producer or consumer prices indexes, provide a measure of the erosion of its value. To measure the impact of price increases, several indexes and "price deflators" to generate "constant dollar" figures are available. These include indexes of producer prices for metal cutting and metal forming machine tools. However, because these indexes are limited in their ability to make adjustments for changes in the qualitative characteristics of machine tools, they should be used with caution.

U.S. machine tool builders have traditionally been active exporters of their products. Until 1978, the U.S. machine tool balance of trade had continuously been positive and had helped offset trade deficits incurred in other sectors. However, a surge in imports in the late 1970's, sparked by unprecedented peacetime machine tool demand, led to the development of a sizable balance of trade deficit. What is troubling is that the competitive impact of machine tool imports is understated in current statistics. The value data for imports exclude important cost elements such as insurance and ocean freight which also affect the balance of payments. These shortcomings of the foreign trade statistics are discussed in Chapter 5, as are other detailed aspects of machine tool foreign trade.

To protect and expand foreign markets many U.S. businesses have established plants in foreign countries. Direct foreign investment increased rapidly during the 1960's and 1970's and U.S. machine tool builders joined this move. While no information is available on machine tool direct foreign investment, data are presented for U.S. direct foreign investments in various countries by all industries and by manufacturing industries.

Definitions and discussions of the terms used in this and other chapters are in the glossary at the end of this book.

THE NATIONAL ECONOMY AND MACHINE TOOLS

1958 to Date

Year	GNP(r) Billion $	Shipments in Billion Dollars All Manufacturing Industries	Durable Goods Industry	Nonelectrical Machinery Industry	Shipments in Million Dollars Machine Tool Industry	Machine Tool Products	Complete Machine Tools
1958	$ 456.8	$ 327.0	$ 162.8	$ 23.4	$ 996	$ 870	$ 591
1959	495.8	363.4	187.3	26.6	1,112	975	616
1960	515.3	370.5	190.6	26.8	1,266	1,126	744
1961	533.8	371.1	187.4	26.6	1,242	1,102	751
1962	574.6	400.3	207.1	29.2	1,430	1,223	821
1963	606.9	420.7	219.4	31.0	1,502	1,370	896
1964	649.8	448.0	235.6	35.3	1,791	1,650	1,164
1965	705.1	491.9	266.7	39.5	2,107	1,955	1,426
1966	772.0	538.4	295.8	46.9	2,554	2,319	1,685
1967	816.4	557.8	303.2	49.2	2,841	2,585	1,806
1968	892.7	603.2	332.4	51.0	2,817	2,500	1,727
1969	963.9	642.5	353.7	56.1	2,835	2,507	1,598
1970	1,015.5	634.0	338.6	56.5	2,598	2,278	1,443
1971	1,102.7	671.1	359.7	56.0	2,019	1,698	998
1972	1,212.8	756.3	408.3	65.8	2,112	1,929	1,019
1973	1,359.3	875.2	476.2	77.8	2,777	2,596	1,501
1974	1,472.8	1,017.5	530.7	92.5	3,580	3,189	2,031
1975	1,598.4	1,039.1	523.9	95.8	3,834	3,432	2,452
1976	1,782.8	1,185.6	608.3	105.5	3,567	3,197	2,060
1977	1,990.5	1,358.4	711.2	122.2	3,943	3,675	2,281
1978	2,249.7	1,522.9	814.2	143.2	4,978	4,735	3,013
1979	2,508.2	1,727.2	912.7	166.5	6,053	5,762	3,877
1980	2,732.0	1,852.7	930.6	180.7	6,981	6,702	4,692
1981	2,052.6	2,017.5	1,006.5	201.5	7,481	7,206	5,096
1982(r)	3,166.0	1,908.3	920.3	180.6	5,840	5,539	3,604
1983(r)	3,401.6	2,045.3	1,019.4	178.3	4,023	3,664	1,845
1984	3,774.7	2,274.9	1,182.0	210.2	NA	NA	2,286
1985(p)	3,988.5	2,341.2	1,246.3	212.6	NA	NA	2,545

NA - Not Available. p - Preliminary. r - Revised.

Sources: Col. 1: U.S. Department of Commerce, "Business Statistics, 1979" and "Survey of Current Business" (monthly). Cols. 2, 3 and 4: U.S, Bureau of the Census. "Manufacturers' Shipments, Inventories and Orders: 1978-1984" (revised) and Series M3-1 (monthly). Cols. 5 and 6: U.S. Bureau of the Census, "Annual Survey of Manufactures," M (AS)-1 & 2 and 1982 "Census of Manufactures," Col. 7: National Machine Tool Builders' Association, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments, and Backlog" (monthly).

The last three columns cover the following three different entities.

Machine Tool Industry: (Standard Industrial Classifications 3541 and 3542). All shipments originating in establishments whose primary products are machine tools. The figures include other-than-machine tools produced in these establishments as well as miscellaneous receipts.

Machine Tool Products: All machine tool products shipped by the machine tool industry and by other industries. Excludes all shipments of items which are not classified as machine tool products.

Complete Machine Tools: Shipments of complete machine tools, with values greater than $2,500 per unit including all accessories, attachments, and numerical controls that are ordered and shipped with the machines, as reported by NMTBA.

THE NATIONAL ECONOMY AND MACHINE TOOLS

Indexes, 1958 to Date

1967 = 100

Year	GNP(r)	All Manufacturing Industries	Durable Goods Industry	Nonelectrical Machinery Industry	Machine Tool Industry (a)	Machine Tool Products (a)	Complete Machine Tools (a)
1958	56.0	58.6	53.7	47.6	35.1	33.7	32.7
1959	60.7	65.1	61.8	54.1	39.1	37.7	34.1
1960	63.1	66.4	62.9	54.5	44.6	43.6	41.2
1961	65.4	66.5	61.8	54.1	43.7	42.6	41.6
1962	70.4	71.8	68.3	59.3	50.3	47.3	45.5
1963	74.4	75.4	72.4	63.0	52.9	53.0	49.6
1964	79.6	80.3	77.7	71.7	63.0	63.8	64.5
1965	86.4	88.2	88.0	80.3	74.2	75.6	79.0
1966	94.6	96.5	97.6	95.3	89.9	89.7	93.3
1967	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1968	109.3	108.1	109.6	103.7	99.2	96.7	95.6
1969	118.1	115.2	116.7	114.0	99.8	97.0	88.5
1970	124.4	113.7	111.7	114.8	91.4	88.1	79.9
1971	135.1	120.3	118.6	113.8	71.1	65.7	55.3
1972	148.6	135.6	134.7	133.7	74.3	74.6	56.4
1973	166.5	156.9	157.1	158.1	97.7	100.4	83.1
1974	180.4	182.4	175.0	188.0	126.0	123.4	112.5
1975	195.8	186.3	172.8	194.7	135.0	132.8	135.8
1976	218.4	212.5	200.6	214.4	125.6	123.7	114.1
1977	243.8	243.5	234.6	248.4	138.8	142.2	126.3
1978	275.6	273.0	268.5	291.1	175.2	183.2	166.8
1979	307.2	309.6	301.0	338.4	213.1	227.9	214.7
1980	334.6	332.1	306.9	367.5	245.7	259.3	259.8
1981	373.9	361.7	332.0	409.6	263.3	278.8	282.2
1982(r)	387.8	342.1	303.5	367.1	205.6	214.3	199.6
1983(r)	416.7	366.7	336.2	362.4	141.6	141.7	102.2
1984	462.4	407.8	389.8	427.2	NA	NA	126.6
1985(p)	466.5	419.7	411.0	432.1	NA	NA	140.9

NA - Not Available. p - Preliminary. r - Revised.

(a) See notes on page 4.

Sources: U.S. Department of Commerce, U.S. Bureau of the Census, and NMTBA.

GROSS NATIONAL PRODUCT AND COMPONENTS

1963 to Date (r)

Year	Gross National Product	Personal Consumption Expenditures	Gross Private Domestic Investment	Net Exports of Good and Services	Government Purchases of Goods and Services
In current dollars (billions)					
1963	$ 606.9	$ 381.7	$ 93.1	$ 8.2	$123.8
1964	649.8	409.3	99.6	10.9	130.0
1965	705.1	440.7	116.2	9.7	138.6
1966	772.0	477.3	128.6	7.5	158.6
1967	816.4	503.6	125.7	7.4	179.7
1968	892.7	552.5	137.0	5.5	197.7
1969	963.9	597.9	153.2	5.6	207.3
1970	1,015.5	640.0	148.8	8.5	218.2
1971	1,102.7	691.6	172.5	6.3	232.4
1972	1,212.8	757.6	202.0	3.2	250.0
1973	1,359.3	837.2	238.8	16.8	266.5
1974	1,472.8	916.5	240.8	16.3	299.1
1975	1,598.4	1,012.8	219.6	31.1	335.0
1976	1,782.8	1,129.3	277.7	18.8	356.9
1977	1,990.5	1,257.2	344.1	1.9	387.3
1978	2,249.7	1,403.5	416.8	4.1	425.2
1979	2,508.2	1,566.8	454.8	18.8	467.8
1980	2,732.0	1,732.6	437.0	32.1	530.3
1981	3,052.6	1,915.1	515.5	33.9	588.1
1982	3,166.0	2,050.7	447.3	26.3	641.7
1983	3,401.6	2,229.3	501.9	−5.3	675.7
1984(r)	3,774.7	2,423.0	674.0	−59.2	736.8
1985	3,988.5	2,582.3	669.3	−78.5	815.4
In constant 1982 dollars (billions)					
1963	$1,873.3	$1,108.4	$307.1	$ −1.9	$459.8
1964	1,973.3	1,170.6	325.9	5.9	470.8
1965	2,087.6	1,236.4	367.0	−2.7	487.0
1966	2,208.3	1,298.9	390.5	−13.7	532.6
1967	2,271.4	1,337.7	374.4	−16.9	576.2
1968	2,365.6	1,405.9	391.8	−29.7	597.6
1969	2,423.3	1,456.7	410.3	−34.9	591.2
1970	2,416.2	1,492.0	381.5	−30.0	572.6
1971	2,484.8	1,538.8	419.3	−39.8	566.5
1972	2,608.5	1,621.9	465.4	−49.4	570.7
1973	2,744.1	1,689.6	520.8	31.5	565.3
1974	2,729.3	1,674.0	481.3	0.8	573.2
1975	2,269.0	1,711.9	383.3	18.9	580.9
1976	2,826.7	1,803.9	453.5	−11.0	580.3
1977	2,958.6	1,883.8	521.3	−35.5	589.1
1978	3,115.2	1,961.0	576.9	−26.8	604.6
1979	3,192.4	2,004.4	575.2	3.6	609.1
1980	3,187.1	2,000.4	509.3	57.0	620.5
1981	3,248.8	2,024.2	545.5	49.4	629.7
1982	3,166.0	2,050.7	447.3	26.3	641.7
1983	3,277.7	2,145.9	503.4	−19.4	647.8
1984	3,492.0	2,239.9	661.3	−85.0	675.9
1985	3,570.0	2,313.0	649.0	−108.4	716.4

r - Revised.

Note: Individual components may not add to total GNP due to rounding.

Sources: U.S. Department of Commerce, "Survey of Current Business" (monthly).

ACTUAL AND PROJECTED GNP AND OTHER ECONOMIC INDICATORS

	Measure	Actual 1983(r)	 1984(r)	 1985(r)	Projection 1986
Gross National Product	Bil. $	$3,401.6	$3,774.7	$3,988.5	$4,240.0
GNP in Constant Dollars	Bil. 1982 $	3,277.7	3,492.0	3,570.0	3,679.0
GNP Implicit Price Deflator	1982 = 100	103.8	108.1	111.7	115.2
Industrial Production	1977 = 100	109.2	121.8	124.5	129.0
Unemployment Rate	Percent	9.6%	7.5%	7.2%	6.8%
Corporate Profits After Taxes	Bil. $	$127.4	$144.0	$140.2	$ 149.5
Non-Residential Fixed Investment	Bil. 1982 $	360.1	430.3	472.0	489.0
Change in Business Inventories	Bil. 1982 $	NA	62.7	5.7	17.9
Personal Consumption Expenditures	Bil. 1982 $	2,145.9	2,239.9	2,313.0	2,374.0
Federal Government Purchases	Bil. 1982 $	275.5	292.5	322.6	337.5

r - Revised.

Sources: Actual: U.S. Department of Commerce, "Survey of Current Business" (monthly). Projected: American Statistical Association and National Bureau of Economic Research panel of forecasters, "Economic Outlook USA, Spring 1986."

SELECTED PRICE DEFLATORS

1966 to Date (r)

Year	Price Deflators Gross National Product	 Personal Consumption Expenditure	 Producers' Durable Equipment	 Metal-Working Machinery & Equipment
	1982 = 100			
1966	35.0	36.7	37.2	30.0
1967	35.9	37.6	38.4	31.2
1968	37.7	39.3	39.9	32.4
1969	39.8	41.0	41.5	33.6
1970	42.0	42.9	43.2	35.6
1971	44.4	44.9	45.5	36.6
1972	46.5	46.7	46.8	37.5
1973	49.5	49.6	47.3	39.1
1974	54.0	54.8	51.1	45.8
1975	59.3	59.2	59.7	53.5
1976	63.1	62.6	64.4	56.9
1977	67.3	66.7	68.3	61.9
1978	72.2	71.6	73.3	67.6
1979	78.6	78.2	78.6	75.2
1980	85.7	86.6	86.0	85.5
1981	94.0	94.6	93.7	93.9
1982	100.0	100.0	100.0	100.0
1983	103.8	103.9	99.9	101.7
1984	108.1	108.2	99.5	104.1
1985	111.7	111.6	99.9	106.5

r - Revised.

Note: Gross National Product, Personal Consumption Expenditures and Producers' Durable Equipment values are "Implicit Price Deflators;" Metal-Working Machinery and Equipment values are "Producer Price Indices."

Source: U.S. Department of Commerce, "Business Statistics," 1979; "Survey of Current Business" (monthly). U.S. Department of Labor, Bureau of Labor Statistics.

Price deflators are used to express changes over a period of time in constant dollars. The implicit price deflator for GNP is a weighted average of the price indexes used to deflate the components of GNP. It is generally regarded as the best single measure of broad price movements in the economy as a whole.

GROSS NATIONAL PRODUCT AND GOVERNMENT RECEIPTS

Selected Years, 1945 to Date (r)

(Values in Billions of Dollars)

Year	GNP	Total Gov't Receipts	Percent of GNP	Federal Gov't Receipts	Percent of GNP	State & Local Gov't Receipts	Percent of GNP
1945	$ 213.4	$ 53.2	24.9%	$ 42.5	19.9%	$ 11.6	5.4%
1950	288.3	69.0	23.9	50.0	17.3	21.3	7.4
1955	405.9	101.1	24.9	72.6	17.9	31.7	7.8
1960	515.3	139.5	27.0	96.1	18.6	49.9	9.7
1965	705.1	188.3	26.7	124.3	17.6	75.1	10.7
1970	1,015.5	302.8	29.8	191.9	18.9	135.4	13.3
1974	1,472.8	455.2	30.9	287.8	19.5	211.4	14.4
1975	1,598.4	470.5	29.4	287.3	18.0	237.7	14.9
1976	1,782.8	538.4	30.2	331.8	18.6	267.8	15.0
1977	1,990.5	605.4	30.4	375.2	18.8	297.7	15.0
1978	2,249.7	681.9	30.3	431.6	19.2	327.6	14.6
1979	2,508.2	765.1	30.5	493.6	19.7	352.0	14.0
1980	2,732.0	838.3	30.7	540.9	19.8	386.1	14.1
1981	3,052.6	977.2	32.0	639.5	20.9	425.6	13.9
1982	3,166.0	1,000.8	31.6	635.5	20.1	449.4	14.2
1983	3,401.6	1,059.6	31.2	658.1	19.4	487.7	14.3
1984	3,774.7	1,171.3	31.0	725.1	19.3	539.8	14.3
1985(p)	3,988.5	1,262.2	31.6	785.7	19.7	575.4	14.4

p - Preliminary. r - Revised.

Note: Federal grants-in-aid to State and local governments are reflected in State and local receipts. Total government receipts have been adjusted to eliminate this duplication.

Source: "Economic Report of the President," February, 1986, and earlier editions. U.S. Department of Commerce, "Survey of Current Business" (monthly).

CORPORATE PROFITS AND TAX

Selected Years, 1945 to Date (r)

(Billions of Dollars)

Year	Corporate Profits Before Taxes	Profits Tax Liability	Profits After Tax	Net Dividend Payments	Undistributed Profits
1945	$ 19.8	$10.7	$ 9.1	$ 4.6	$ 4.5
1950	42.9	17.9	25.0	8.8	16.2
1955	49.2	22.0	27.2	10.3	16.9
1960	49.9	22.7	27.2	12.9	14.3
1965	77.4	30.9	46.5	19.1	27.4
1970	76.0	34.4	41.7	22.5	19.2
1974	138.9	51.8	87.1	29.7	57.3
1975	134.8	50.9	83.9	29.6	54.3
1976	170.3	64.2	106.0	34.6	71.4
1977	200.4	73.0	127.4	39.5	87.9
1978	233.5	83.5	150.0	44.7	105.2
1979	257.2	88.0	169.2	50.1	119.1
1980	237.1	84.8	152.3	54.7	97.6
1981	226.5	81.1	145.4	63.6	81.8
1982	169.6	63.1	106.5	66.9	39.6
1983	205.0	75.2	129.8	70.8	59.0
1984	237.6	93.6	144.0	78.1	65.9
1985	225.3	85.0	140.2	83.5	56.7

r - Revised.

Note: Individual items may not add to totals due to rounding.

Source: U.S. Department of Commerce, "Survey of Current Business" (monthly).

THE FEDERAL BUDGET
Fiscal Years, 1930 to Date (r)
(Billions of Dollars)

Year	Receipts	Outlay	Surplus or Deficit (-)	Year	Receipts	Outlay	Surplus or Deficit (-)
1930	$ 4.1	$ 3.3	$ 0.7	1960	$ 92.5	$ 92.2	$ 0.3
1931	3.1	3.6	-0.5	1961	94.4	97.7	-3.3
1932	1.9	4.7	-2.7	1962	99.7	106.8	-7.1
1933	2.0	4.6	-2.6	1963	106.6	111.3	-4.8
1934	3.0	6.6	-3.6	1964	112.7	118.6	-5.9
1935	3.7	6.5	-2.8	1965	116.8	118.2	-1.4
1936	4.0	8.4	-4.4	1966	130.8	134.7	-3.7
1937	5.0	7.7	-2.8	1967	148.8	157.5	-8.6
1938	5.6	6.8	-1.2	1968	153.0	178.1	-25.2
1939	6.3	9.1	-2.8	1969	186.9	183.6	3.2
1940	6.5	9.5	-2.9	1970	192.8	195.6	-2.8
1941	8.7	13.7	-4.9	1971	187.1	210.2	-23.0
1942	14.6	35.1	-20.5	1972	207.3	230.7	23.4
1943	24.0	78.6	-54.6	1973	230.8	245.7	-14.9
1944	43.7	91.3	-47.6	1974	263.2	269.4	-6.1
1945	45.2	92.7	-47.6	1975	279.1	332.3	-53.2
1946	39.3	55.2	-15.9	1976	298.1	371.8	-73.7
1947	38.5	34.5	4.0	Tr. Qtr.	81.2	96.0	-14.7
1948	41.6	29.8	11.8	1977	355.6	409.2	-53.6
1949	39.4	38.8	0.6	1978	399.6	458.7	-59.2
1950	39.4	42.6	-3.1	1979	463.3	503.5	-40.2
1951	51.6	45.5	6.1	1980	517.1	590.9	-73.8
1952	66.2	67.7	-1.5	1981	599.3	678.2	-78.9
1953	69.6	76.1	-6.5	1982	617.8	745.7	-127.9
1954	69.7	70.9	-1.2	1983	600.6	808.3	-207.8
1955	65.5	68.4	-3.0	1984(r)	666.5	851.8	-185.3
1956	74.6	70.6	3.9	1985(r)	734.1	946.3	-212.3
1957	80.0	76.6	3.4	1986E	777.1	979.9	-202.8
1958	79.6	82.4	-2.8	1987E	850.4	994.0	-143.6
1959	79.2	92.1	-12.8				

E - Estimate. r - Revised.

Tr. Qtr.-Transition Quarter: Beginning with the 1977 Federal Budget, the fiscal year runs from October 1 through September 30. To facilitate the conversion, a three-month transition period was provided between fiscal years 1976 and 1977.

Note: 1930 to 1939: Administrative Budget: 1940 to 1953: Consolidated Cash Statement: 1954 to Date: Unified Budget.

Source: "Economic Report of the President," February 1986 and earlier editions.

GROSS NATIONAL PRODUCT AND PRIVATE INVESTMENT

1959 to Date (r)

(Values in Billions of Current Dollars)

Year	Gross National Product Billion $	Gross Private Fixed Nonresidential Domestic Investment			
		Total		Producers' Durable Equipment	
		Billion $	% of GNP	Billion $	% of GNP
1959	$ 495.8	$ 46.3	9.3%	$ 28.3	5.7%
1960	515.3	48.8	9.5	29.7	5.8
1961	533.8	48.3	9.0	28.9	5.4
1962	574.6	52.5	9.1	32.1	5.6
1963	606.9	55.2	9.1	34.4	5.7
1964	649.8	61.4	9.4	38.7	6.0
1965	705.1	73.1	10.4	45.8	6.5
1966	772.0	83.5	10.8	53.0	6.9
1967	816.4	84.4	10.3	53.7	6.6
1968	892.7	91.4	10.2	58.5	6.6
1969	963.9	102.3	10.6	65.2	6.8
1970	1,015.5	105.2	10.4	66.1	6.5
1971	1,102.7	109.6	9.9	68.7	6.2
1972	1,212.8	123.0	10.1	78.5	6.5
1973	1,359.3	145.9	10.7	94.5	7.0
1974	1,472.8	160.6	10.9	103.6	7.0
1975	1,598.4	162.9	10.2	106.6	6.7
1976	1,782.8	180.0	10.1	119.9	6.7
1977	1,990.5	214.2	10.8	147.4	7.4
1978	2,249.7	259.0	11.5	178.0	7.9
1979	2,508.2	302.8	12.1	203.3	8.1
1980	2,732.0	322.8	11.8	208.9	7.6
1981	3,052.6	369.2	12.1	230.7	7.6
1982	3,166.0	366.7	11.6	223.4	7.1
1983	3,401.6	356.3	10.5	230.2	6.8
1984	3,774.7	427.9	11.3	280.2	7.4
1985	3,988.5	476.2	11.9	306.0	7.7

r - Revised.

Sources: U.S. Department of Commerce, "Survey of Current Business" (monthly).

Gross private fixed nonresidential domestic investment includes capital expenditures by the domestic business sector for (1) new and replacement construction (e.g., buildings, stores, and warehouses) and (2) producers' durable equipment. Expenditures for producers' durable equipment include the new and replacement purchases of automobiles, trucks, various types of machinery, and other equipment used by the private sector in the production of goods and services.

GROSS NATIONAL PRODUCT AND PRIVATE INVESTMENT

1948 to Date (r)

(Values in Billions of 1982 Dollars)

Year	Gross National Product Billion $	Gross Private Fixed Nonresidential Domestic Investment			
		Total		Producers' Durable Equipment	
		Billion $	% of GNP	Billion $	% of GNP
1948	$1,108.7	$127.4	11.5%	$ 76.9	6.9%
1949	1,109.0	114.8	10.4	65.5	5.9
1950	1,203.7	124.0	10.3	71.2	5.9
1951	1,328.2	131.7	9.9	75.2	5.7
1952	1,380.0	130.6	9.5	73.3	5.3
1953	1,435.3	140.1	9.8	77.7	5.4
1954	1,416.2	137.5	9.7	72.7	5.1
1955	1,494.9	151.0	10.1	81.7	5.5
1956	1,525.6	160.4	10.5	84.9	5.6
1957	1,551.1	161.1	10.4	85.9	5.5
1958	1,539.2	143.9	9.3	73.3	4.8
1959	1,629.1	153.6	9.4	81.7	5.0
1960	1,665.3	159.4	9.6	83.3	5.0
1961	1,708.7	158.2	9.3	80.5	4.7
1962	1,799.4	170.2	9.5	88.9	4.9
1963	1,873.3	176.6	9.4	95.1	5.1
1964	1,973.3	194.9	9.9	107.0	5.4
1965	2,087.6	227.6	10.9	125.8	6.0
1966	2,208.3	250.4	11.3	142.4	6.4
1967	2,271.4	245.0	10.8	139.6	6.1
1968	2,365.6	254.5	10.8	146.5	6.2
1969	2,423.3	269.7	11.1	156.8	6.5
1970	2,416.2	264.0	10.9	152.9	6.3
1971	2,484.8	258.4	10.4	151.0	6.1
1972	2,608.5	277.0	10.6	167.5	6.4
1973	2,744.1	317.3	11.6	199.6	7.3
1974	2,729.3	317.8	11.6	202.7	7.4
1975	2,695.9	281.2	10.4	178.4	6.6
1976	2,826.7	290.6	10.3	186.2	6.6
1977	2,958.6	324.0	11.0	215.7	7.3
1978	3,115.2	362.1	11.6	242.8	7.8
1979	3,192.4	389.4	12.2	258.8	8.1
1980	3,187.1	379.2	11.9	243.0	7.6
1981	3,248.8	395.2	12.2	246.4	7.6
1982	3,166.0	366.7	11.6	223.4	7.1
1983	3,277.7	360.1	11.0	230.5	7.0
1984	3,492.0	430.3	12.3	281.6	8.1
1985	3,570.0	472.0	13.2	306.3	8.6

r - Revised.

Sources: U.S. Department of Commerce, "Business Statistics, 1977;" and "Survey of Current Business" (monthly).

U.S. BALANCE OF TRADE
1966 to Date

Year	All Merchandise Billions of Dollars			Machine Tools and Parts Millions of Dollars		
	Exports	Imports	Net Balance	Exports	Imports	Net Balance
1966	$ 29.3	$ 25.5	$ 3.8	$ 273.6	$ 137.4	$ 136.2
1967	30.7	26.9	3.8	294.5	203.7	90.8
1968	33.6	33.0	.6	286.0	191.3	94.7
1969	36.4	35.8	.6	323.5	182.5	140.9
1970	42.0	39.8	2.2	403.9	158.5	245.4
1971	42.8	45.5	-2.7	351.0	109.6	241.4
1972	48.8	55.8	-7.0	332.1	141.8	190.3
1973	71.4	70.4	1.0	443.0	211.6	231.4
1974	98.3	103.7	-5.4	566.5	330.3	236.2
1975	107.1	98.0	9.1	705.9	382.4	323.5
1976	114.4	123.4	-9.0	682.8	383.3	299.5
1977	119.7	150.2	-30.5	579.6	482.2	97.4
1978	140.9	174.5	-33.6	738.6	832.4	-93.7
1979	179.2	209.4	-30.2	878.6	1,269.5	- 390.9
1980	220.1	244.2	-24.1	1,099.2	1,556.9	- 457.7
1981	232.7	261.1	-28.4	1,445.6	1,712.9	- 267.3
1982(r)	214.0	249.5	-35.5	1,002.4	1,489.4	- 487.0
1983(r)	207.2	282.3	-75.1	691.9	1,100.2	- 408.3
1984(r)	222.5	352.1	-129.6	734.9	1,652.7	- 917.8
1985(p)	224.6	366.5	-141.9	772.2	2,110.2	-1,338.0

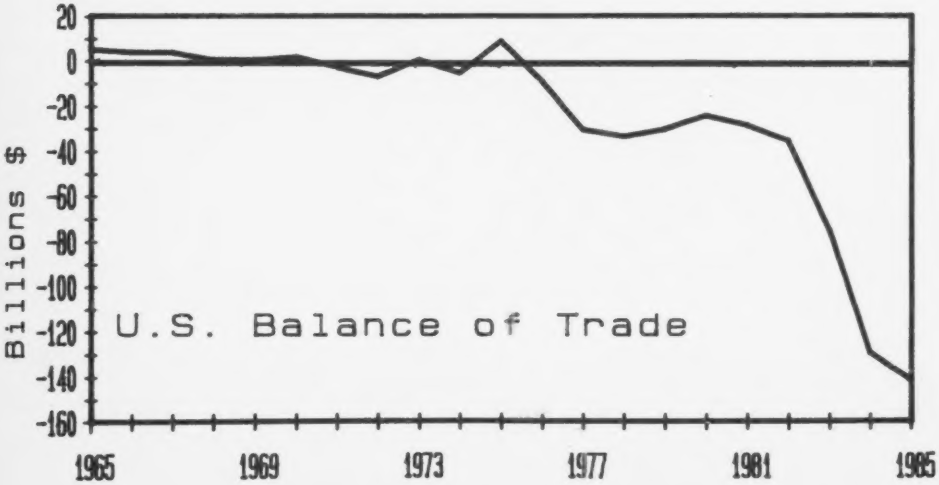
p - Preliminary. r - Revised.

Note: Machine tool export figures include used and rebuilt machine tools, machine tools designed for home workshops and laboratories, and some metal working machinery other than machine tools. Some attachments and accessories are included prior to 1972.

Individual items may not add to totals due to rounding.

Source: All merchandise: U.S. Department of Commerce, "Survey of Current Business," (monthly); Machine Tools: U.S. Bureau of the Census, "EM 522" and "IM 146."

For details on how the values in the above table are computed, see the text introduction to Chapter 5.



VALUE OF U.S. DIRECT FOREIGN INVESTMENTS

Book Value at Year End, 1979 to 1984

(Millions of U.S. Dollars)

	1979	1980	1981	1982	1983(r)	1984(p)
World:						
Total All Industries	$187,858	$215,375	$228,348	$221,512	$226,962	$233,412
Manufacturing	79,023	89,290	92,388	90,582	90,171	93,012
Canada:						
Total All Industries	40,662	45,119	47,073	46,183	47,553	50,467
Manufacturing	17,531	19,028	19,818	19,724	19,851	21,467
United Kingdom:						
Total All Industries	23,696	28,460	30,316	29,914	30,801	32,145
Manufacturing	11,447	13,833	13,087	12,840	13,062	12,654
European Economic Community:						
Total All Industries	42,379	49,040	50,427	47,863	48,113	46,722
Manufacturing	24,506	27,633	28,117	27,351	27,066	27,281
Other Western Europe:						
Total All Industries	16,981	18,787	20,858	21,682	23,775	24,796
Manufacturing	3,676	3,821	4,065	3,938	3,833	3,726
Japan:						
Total All Industries	6,180	6,225	6,762	6,928	8,063	8,374
Manufacturing	2,777	2,954	3,233	3,462	4,071	4,120
Australia, New Zealand, & South Africa:						
Total All Industries	9,579	10,583	12,003	11,588	11,671	11,554
Manufacturing	3,946	4,205	4,703	4,070	3,887	3,617
Latin America						
Total All Industries	35,220	38,761	38,838	32,546	29,674	28,094
Manufacturing	12,440	14,590	15,809	15,630	14,766	15,665
Other Areas:						
Total All Industries	13,161	18,400	22,072	24,808	27,314	31,261
Manufacturing	2,700	3,226	3,556	3,567	3,634	4,482

p – Preliminary. r – Revised.

Source: U.S. Department of Commerce, "Survey of Current Business," (August).

Direct foreign investments include purchases and sales of equity interest in foreign enterprises and capital movements between U.S. corporations and their foreign affiliates.

ESTIMATES OF CAPITAL EXPENDITURES*
BY MAJORITY – OWNED FOREIGN AFFILIATES OF U.S. COMPANIES
BY SELECTED COUNTRY OR AREA, 1979 – 1986

(Millions of U.S. Dollars)

	Actual						Projection	
	1979	1980	1981	1982	1983	1984(r)	1985(r)	1986
WORLD								
Total Manufacturing	$15,419	$19,540	$19,164	$16,755	$13,724	$14,048	$15,251	$17,347
Mchy., Except Elec.	4,749	5,589	5,106	4,900	3,778	3,206	3,085	3,841
CANADA								
Total Manufacturing	2,776	3,728	3,800	2,740	2,590	2,702	3,344	3,668
Mchy., Except Elec.	403	499	649	601	413	295	498	505
LATIN AMERICA								
Total Manufacturing	1,957	2,760	3,114	2,703	1,744	1,909	2,117	2,380
Mchy., Except Elec.	257	411	422	369	227	319	298	282
EUROPE								
Total Manufacturing	9,224	11,127	10,273	9,274	7,824	7,619	7,823	9,211
Mchy., Except Elec.	3,694	4,099	3,423	3,249	2,844	2,247	1,876	2,553
UNITED KINGDOM								
Total Manufacturing	2,596	3,005	2,591	2,529	2,113	2,107	2,245	2,552
Mchy., Except Elec.	834	784	735	635	600	465	521	680
FRANCE								
Total Manufacturing	1,273	1,582	1,316	1,323	1,241	1,232	1,046	1,219
Mchy., Except Elec.	790	977	821	868	798	746	466	615
FEDERAL REP. OF GERMANY								
Total Manufacturing	2,826	3,233	2,653	2,306	2,180	2,163	2,339	2,879
Mchy., Except Elec.	1,137	1,174	959	894	723	577	448	720
ITALY								
Total Manufacturing	634	870	797	696	639	504	610	636
Mchy., Except Elec.	D	D	D	D	350	208	220	243
ASIA AND PACIFIC								
Total Manufacturing	919	1,281	1,237	1,327	1,004	1,265	1,288	1,378
Mchy., Except Elec.	355	34(a)	47(a)	57(a)	58(a)	317	381	467
JAPAN								
Total Manufacturing	462	707	666	765	463	551	612	701
Mchy., Except Elec.	337	D	D	D	D	258	330	406
SOUTH AFRICA								
Total Manufacturing	87	117	147	211	174	137	94	64
Mchy., Except Elec.	11	18	19	18	14	12	17	12
AUSTRALIA								
Total Manufacturing	381	453	512	424	323	364	516	566
Mchy., Except Elec.	28	D	D	29	12	14	13	20

D – Withheld to avoid disclosure. r – Revised.

(a) Excludes Japan.

* – "Capital expenditures" previously were referred to as "property, plant, and equipment expenditures." They represent gross outlays charged to capital accounts to acquire, add to, or improve real property, plant, and equipment. Sales or other dispositions of fixed assets are not netted against these outlays.

Source: U.S. Department of Commerce, "Survey of Current Business" (monthly).

EXPENDITURES ON NEW PLANT AND EQUIPMENT

Major Industries, Selected Years, 1960 to Date

(Billions of Dollars)

Year	All Industries	Total Manufacturing Industries	Durable Goods Industries	Electrical Machinery and Equipment	Non-electrical Machinery	Motor Vehicles and Parts	Other Transportation Equipment
1960	$ 39.44	$ 16.36	$ 8.28	$ 1.02	$ 1.21	$ 1.47	$0.47
1965	59.52	25.41	13.49	1.69	2.24	3.00	0.74
1970	91.91	36.99	19.80	3.49	3.78	3.05	1.60
1971	92.91	33.60	16.78	3.03	3.15	2.42	1.12
1972	103.40	35.42	18.22	2.83	3.23	3.00	1.41
1973	120.03	42.35	22.63	3.48	3.95	3.83	1.77
1974	139.67	52.48	26.77	3.80	5.13	4.29	2.31
1975	142.42	53.66	25.37	3.08	4.86	3.33	2.13
1976	158.44	58.53	27.50	3.61	5.43	3.60	2.19
1977	184.82	67.48	32.77	4.61	6.35	5.82	2.50
1978	217.76	78.58	39.46	5.89	7.42	7.19	3.63
1979	254.96	95.92	48.50	7.55	10.17	8.34	4.71
1980	282.80	112.33	55.36	9.77	11.41	9.02	5.96
1981	315.22	126.54	59.81	10.58	13.68	9.83	5.60
1982	310.58	120.68	55.35	11.01	13.44	7.77	4.79
1983	304.78	116.20	53.08	11.42	13.50	7.29	4.04
1984(r)	354.44	138.82	66.24	14.61	15.41	11.20	4.98
1985(r)	386.41	153.15	73.14	15.97	15.97	14.45	4.84
1986E	385.13	151.84	70.99	13.91	15.34	14.71	4.69

E – Estimate. r – Revised.

Sources: U.S. Department of Commerce, "Survey of Current Business," (monthly), Estimate, "Survey of Current Business," (April).

NEW PLANT AND EQUIPMENT PROJECTS

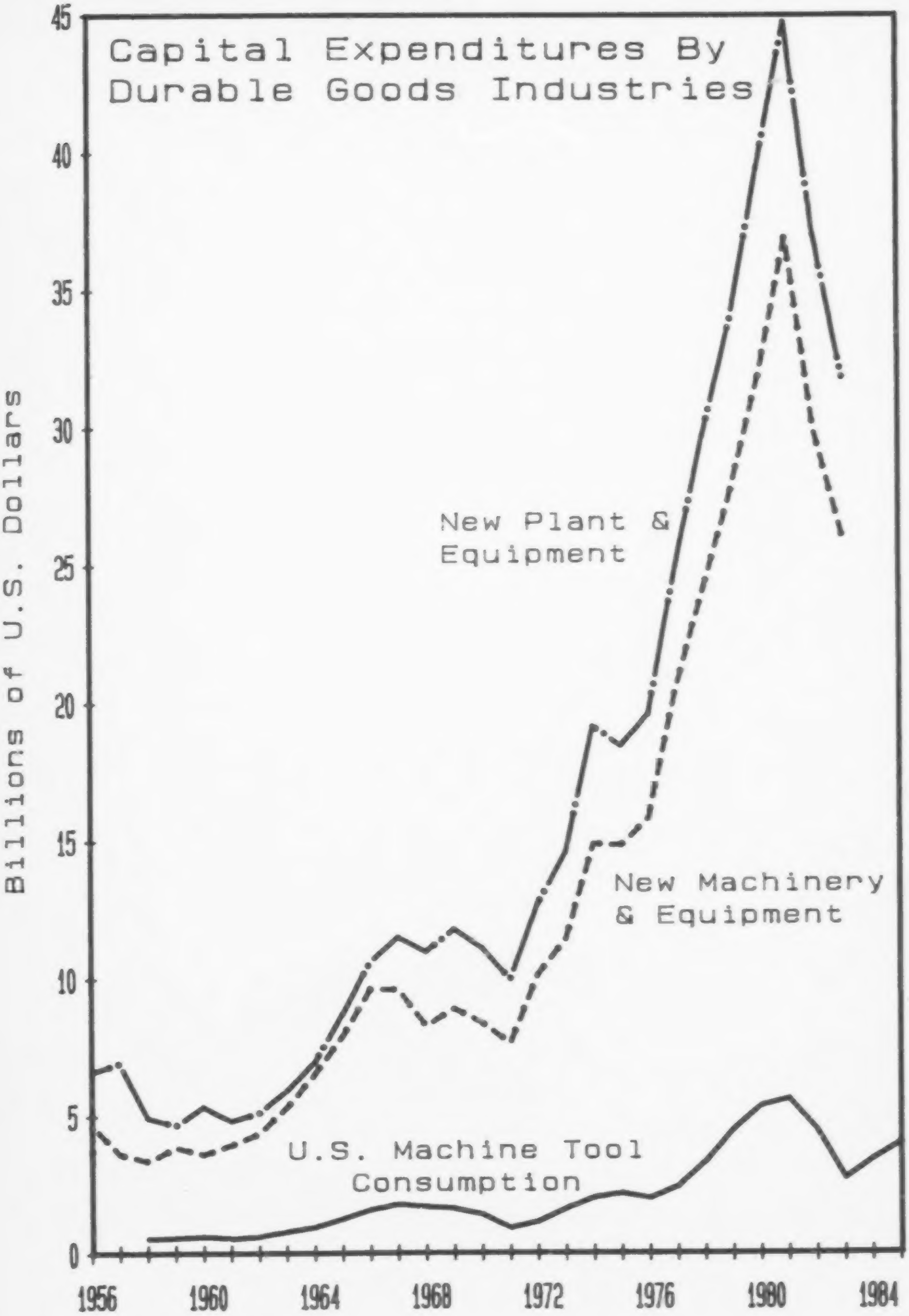
Starts During Year and Carry – Over at Year End, 1965 to 1983

(Billions of Dollars)

Year	Total Manufacturing		Durables		Electrical Machinery		Nonelectrical Machinery		Transportation Equipment		Public Utilities	
	New Starts	Carry-over	New Starts	Carry-over	New Starts	Carry-over	New Starts	Carry-over	New Starts	Carry-over	New Starts	Carry-over
1970	$ 33.82	$22.81	$17.41	$11.86	$ 2.91	$2.99	$ 3.66	$1.06	$ 4.12	$ 2.85	$16.76	$ 23.16
1971	31.78	20.99	15.86	10.93	2.35	2.31	2.98	.89	3.78	3.09	20.69	29.15
1972	38.97	24.54	19.30	12.01	2.63	2.10	3.39	1.04	4.74	3.42	29.77	42.65
1973	53.21	35.38	28.07	17.33	4.12	2.72	4.43	1.50	7.02	4.79	36.22	60.91
1974	61.24	43.41	31.07	21.59	3.55	2.42	6.20	2.47	7.11	5.03	47.72	88.79
1975	56.51	45.00	23.71	18.98	2.59	1.88	5.33	2.84	4.40	3.52	39.32	108.14
1976	59.38	44.44	29.80	20.30	4.27	2.49	6.20	3.52	6.64	3.77	28.09	113.86
1977	77.40	52.62	36.59	22.85	4.80	2.62	6.84	3.77	10.63	5.33	34.53	121.60
1978	88.16	61.05	46.20	28.62	6.27	3.20	7.71	4.27	15.62	8.94	38.74	130.39
1979	112.98	75.35	59.18	36.72	8.16	4.08	12.68	6.41	19.01	12.63	21.67	118.10
1980	123.32	85.16	57.67	36.92	10.25	5.11	10.72	5.81	16.50	11.42	43.69	130.16
1981	135.19	93.73	68.89	44.37	11.50	6.49	15.95	8.75	19.35	12.26	34.98	126.04
1982	104.35	79.21	45.73	33.25	8.97	4.75	11.02	6.73	13.87	10.97	15.11	99.48
1983	114.51	82.04	53.28	34.90	12.49	6.33	12.62	7.06	13.55	11.50	26.98	85.46

Note: The publication of this data was discontinued in 1983.

Source: U.S. Department of Commerce, "Survey of Current Business" (March).


Capital Expenditures By
Durable Goods Industries
Billions of U.S. Dollars
45
40
35
30
25
20
15
10
5
0
1956
1960
1964
1968
1972
1976
1980
1984
New Plant &
Equipment
New Machinery
& Equipment
U.S. Machine Tool
Consumption

EXPENDITURES ON NEW PLANT AND EQUIPMENT BY DURABLE GOODS INDUSTRIES AND MACHINE TOOL CONSUMPTION

1953 to Date

	New Plant & Equipment Expenditures Billion Dollars				U.S. Machine Tool Consumption (c) (Mil. Dollars)	Machine Tool Consumption As a % of		
	BEA (a,r)	Census (b)				BEA (a,r)	Census (b)	
Year	Total	Total	Plant	Equipment		Total	Total	Equipment
1953	$ 5.31	$ 4.26	$1.25	$ 3.01	NA	NA	NA	NA
1954	4.91	4.32	1.20	3.12	NA	NA	NA	NA
1955	5.41	4.59	1.28	3.31	NA	NA	NA	NA
1956	7.45	6.62	1.95	4.67	NA	NA	NA	NA
1957	7.84	6.94	2.20	4.74	NA	NA	NA	NA
1958	5.61	4.94	1.33	3.61	$ 554.9	9.9%	NA	NA
1959	6.73	4.64	1.29	3.35	587.1	8.7	13.6%	18.8%
1960	8.28	5.34	1.47	3.87	634.0	7.7	12.3	16.9
1961	7.42	4.81	1.21	3.60	544.4	7.3	12.3	16.4
1962	7.81	5.12E	1.17E	3.95E	625.0	8.0	13.5	17.4
1963	8.64	5.92	1.55	4.37	798.3	9.2	14.7	19.9
1964	10.99	6.95	1.64	5.31	967.2	8.8	15.1	19.7
1965	13.49	8.70	2.18	6.52	1,263.5	9.4	15.4	20.6
1966	17.23	10.61E	2.72E	7.89E	1,588.9	9.2	15.6	21.0
1967	17.82	11.52	1.92	9.60	1,780.0	10.0	16.1	19.3
1968	17.93	10.97	2.71	8.26	1,669.8	9.3	15.6	20.7
1969	19.97	11.81	2.90	8.91	1,605.9	8.0	14.1	18.7
1970	19.80	11.11	2.74	8.37	1,391.5	7.0	13.0	17.3
1971	16.78	9.96	2.34	7.62	896.4	5.3	9.6	12.6
1972	18.22	12.70	2.56	10.14	1,145.1	6.3	9.5	12.0
1973	22.63	14.58	3.15	11.43	1,629.4	7.2	11.9	15.1
1974	26.77	19.13	4.26	14.87	2,026.2	7.6	11.1	14.3
1975	25.37	18.42	3.60	14.82	2,187.0	8.6	12.5	15.5
1976	27.50	19.57	3.75	15.82	1,981.6	7.2	11.0	13.6
1977	32.77	24.93	4.41	20.52	2,427.6	7.4	10.3	12.5
1978	39.46	29.66	5.52	24.14	3,324.8	8.4	11.3	13.9
1979	48.50	33.91	6.22	27.69	4,488.7	9.3	13.9	17.1
1980	55.36	39.42	7.62	31.80	5,338.0	9.6	13.8	17.1
1981	59.81	44.75	7.83	36.91	5,593.2	9.4	13.1	15.9
1982	55.35	37.02	7.23	29.80	4,447.4	8.0	12.0	14.9
1983	53.08	31.78	5.80	25.98	2,706.9	5.1	8.5	10.4
1984(r)	66.24	NA	NA	NA	3,368.8	5.1	NA	NA
1985	73.14	NA	NA	NA	4,017.6	5.5	NA	NA

NA – Not Available. E – Estimate. r – Revised.

(a) Bureau of Economic Analysis: covers all establishments (Manufacturing and Nonmanufacturing) operated by Manufacturing companies.

(b) Bureau of the Census: covers all Manufacturing establishments.

(c) U.S. domestic machine tool shipments plus imports.

Source: Bureau of Economic Analysis, U.S. Department of Commerce, "Survey of Current Business;" Bureau of the Census, "Annual Survey of Manufactures," M(AS) – 5, Expenditures for New Plant and New Equipment; U.S. Bureau of the Census, "FT 135" and earlier reports; and National Machine Tool Builders' Association.

The last three columns in the above table show the percentage of investment for machine tools has declined since the 1960's. The U.S. share of machine tool investment has declined even more because imports have increased their share of the U.S. machine tool market. See the table in the beginning of chapter 5 on machine tool imports as a percentage of U.S. consumption.

EXPENDITURES FOR NEW MACHINERY AND EQUIPMENT

By Major Machine Tool Consuming Industries, 1947 to Date

(Millions of Dollars)

Year	Durable Goods Industries	Fabricated Metal Products	Nonelectrical Machinery	Electrical Machinery	Motor Vehicles & Equipment (a)	Aircraft & Parts
1947	NA	$ 212.7	$ 312.5	$ 179.7	$ 75.5	$ 18.8
1948	NA	NA	NA	NA	NA	NA
1949	NA	167.8	214.5	133.5	147.9	27.2
1950	NA	223.9	213.0	145.4	216.0	S
1951	NA	246.0	348.5	192.7	290.5	79.7
1952	NA	238.9	342.5	215.9	270.5	77.9
1953	$ 3,010	288.9	404.1	258.8	406.9	83.4
1954	3,120	323.2	425.5	247.6	621.0	87.8
1955	3,309	335.0	440.6	262.3	484.9	115.7
1956	4,669	361.1	545.3	342.3	854.9	181.4
1957	4,740	398.2	553.6	348.4	581.0	209.7
1958	3,605	316.8	487.0	311.1	271.0	129.2
1959	3,350	357.4	399.6	375.2	310.5	128.3
1960	3,866	360.4	435.1	449.0	371.0	124.4
1961	3,600	314.3	416.6	424.0	319.4	149.7
1962	3,946	390.2	447.8	476.4	366.4	189.4
1963	4,366	460.1	612.1	525.9	510.4	191.8
1964	5,306	549.4	713.3	568.2	712.0	204.6
1965	6,520	612.0	960.3	810.5	869.9	206.3
1966	7,869	725.6	1,157.2	1,019.6	893.9	414.7
1967	9,595	834.2	1,361.5	1,087.9	643.0	546.6
1968	8,256	799.5	1,299.8	1,061.3	632.0	463.8
1969	8,905	951.9	1,449.7	1,239.2	781.2	479.0
1970	8,365	872.0	1,377.3	1,134.6	731.7	292.9
1971	7,619	808.6	1,292.7	1,061.1	620.4	197.5
1972	10,139	1,030.7	1,478.2	1,123.4	1,921.3	139.8
1973	11,432	1,345.4	1,791.2	1,567.9	1,625.3	197.6
1974	14,868	1,470.4	2,456.8	1,899.9	2,087.5	227.6
1975	14,821	1,628.9	2,571.6	1,519.1	1,653.6	286.7
1976	15,822	1,724.8	2,611.1	1,816.5	1,908.1	350.6
1977	20,525	2,280.8	3,502.5	2,360.2	3,195.4	417.5
1978	24,142	2,494.4	4,427.7	2,937.9	3,968.6	575.1
1979	27,689	2,741.6	5,326.0	3,650.3	4,243.4	936.4
1980	31,803	3,219.8	6,066.1	4,780.1	4,752.6	1,262.7
1981	36,912	3,791.8	7,040.1	5,098.1	7,539.0	1,325.4
1982	29,796	2,934.0	6,489.4	5,364.4	3,377.7	1,230.1
1983	25,977	2,316.3	5,447.0	5,826.6	1,991.2	1,107.1

NA – Not Available. S – Estimate did not meet publication standards.

(a) Beginning in 1972, expenditures for special automotive tools (such as dies, die sets, jigs, fixtures, etc.) are included as capital expenditures. For transition information, special tooling expenditures amount to $1.2 billion for 1972 and $840 million for 1973.

Source: U.S. Bureau of the Census, "Annual Survey of Manufactures, M(AS) – 4, Expenditures for New Plant and New Equipment."

CAPITAL FORMATION IN MANUFACTURING INDUSTRIES (r)

Selected Years, 1960 to Date

(Billions of Dollars)

Year	Purchases		Depreciation (a)		Net Investment (b)		Net Value (c)	
	Total (d)	Equipment	Total (d)	Equipment	Total (d)	Equipment	Total (d)	Equipment
In Current Dollars								
1960	$10.4	$ 7.5	$ 8.4	$ 6.7	$ 2.0	$ .8	$ 94.7	$ 63.3
1965	18.0	12.8	10.4	8.2	7.6	4.6	121.1	78.5
1970	23.8	17.4	16.5	12.7	7.3	4.7	203.8	126.8
1971	22.6	16.8	17.9	13.6	4.5	3.2	219.9	134.2
1972	25.2	19.4	19.7	14.6	5.5	4.8	233.6	141.3
1973	27.9	21.3	20.7	15.4	7.2	5.9	255.3	153.9
1974	37.4	28.5	23.8	17.8	13.6	10.7	313.5	193.6
1975	38.5	30.5	28.7	22.0	9.8	8.5	351.3	226.3
1976	41.7	33.3	31.9	24.7	9.8	8.6	382.5	248.4
1977	48.0	39.2	35.6	27.6	12.4	11.6	424.9	278.7
1978	58.2	47.2	40.2	31.4	18.0	15.8	493.7	317.9
1979	67.3	52.8	46.6	36.3	20.7	16.5	550.8	363.8
1980	75.3	60.6	53.1	41.8	22.2	18.8	633.9	424.9
1981	81.9	65.4	61.0	48.3	20.9	17.1	713.4	418.7
1982	78.3	61.6	67.2	53.5	[illegible]	8.1	715.2	513.5
1983	68.4	55.9	70.0	55.5	−1.6	.4	768.0	517.4
1984	82.4	69.1	72.7	57.5	9.7	11.6	797.6	537.1
1985	88.8	73.4	75.7	60.0	13.1	13.4	823.0	558.7
In 1982 Dollars								
1960	$34.5	$23.6	$27.4	$20.9	$ 7.1	$ 2.7	$321.2	$202.2
1965	56.4	38.4	31.4	23.7	25.0	14.7	382.4	235.8
1970	59.9	42.7	40.8	30.6	19.1	12.1	513.3	314.3
1971	53.8	39.4	42.3	31.7	11.5	7.7	525.3	322.6
1972	57.1	43.6	45.1	33.4	12.0	10.2	537.7	333.4
1973	61.6	47.7	45.8	34.6	5.8	13.1	554.2	347.2
1974	74.0	57.1	47.6	36.3	6.4	20.8	581.1	368.6
1975	65.1	51.3	49.8	38.1	5.3	13.2	597.2	382.5
1976	66.2	52.1	51.8	39.9	14.4	12.2	612.5	395.5
1977	71.4	57.8	54.1	41.8	17.3	16.0	630.5	412.3
1978	80.2	64.7	56.4	44.0	23.8	20.7	655.1	433.7
1979	85.1	66.7	59.7	46.6	25.4	20.1	681.4	454.8
1980	86.8	69.8	62.0	48.9	26.8	20.9	707.2	476.6
1981	86.2	68.8	64.8	51.4	21.4	17.4	729.7	495.0
1982	77.8	61.0	67.2	53.5	10.6	7.5	741.3	503.6
1983	67.6	55.7	68.9	55.0	−1.3	0.7	741.1	505.3
1984	81.0	68.8	70.7	56.7	10.3	12.1	752.8	518.8
1985	87.1	73.4	73.1	59.0	14.0	14.4	768.3	534.6

r – Revised.

(a) Straight – line depreciation.
(b) Represents the difference between the purchase and depreciation series.
(c) Represents net value in preceding year plus net investment based on straight – line depreciation for year shown.
(d) Total includes equipment and structures.

Source: U.S. Bureau of Economic Analysis.

Data refer to privately owned manufacturing industries and are based on the fixed capital formation components of the gross national product. Stocks are as of end of year; investment and depreciation are annual totals.

CAPITAL APPROPRIATIONS AND BACKLOG OF UNSPENT APPROPRIATIONS (a)

By Selected Industry Groups, 1965 to Date

	All Manufacturing		Durables		Nonelectrical Machinery	
Year	Approp.	Backlog	Approp.	Backlog	Approp.	Backlog
In Current Dollars (Billions)						
1965	$ 22.3	$17.9	$11.6	$ 9.4	$ 2.1	$1.3
1966	25.4	20.2	14.0	11.4	2.8	1.5
1967	23.9	19.9	12.0	11.0	2.5	1.4
1968	24.8	20.9	12.6	11.5	2.4	1.3
1969	29.5	23.4	15.0	12.4	3.0	1.3
1970	25.3	20.9	12.4	10.8	3.1	1.2
1971	23.1	18.9	11.2	9.4	2.7	1.3
1972	28.8	23.3	14.1	11.8	3.2	1.8
1973	42.9	37.1	21.6	18.7	4.3	2.6
1974	53.7	49.8	24.9	22.7	5.8	3.8
1975	45.0	46.4	16.2	18.1	3.7	3.5
1976	50.0	47.5	22.4	21.0	5.0	4.0
1977	63.4	56.5	26.6	24.6	5.1	4.2
1978	67.2	63.4	33.1	31.1	6.3	5.0
1979	88.5	76.5*	43.3	38.8*	10.2	6.9*
1980	104.6	90.7*	44.3	40.8*	9.4	6.5*
1981	107.0	92.5*	42.1	39.6*	12.7	8.6*
1982	87.5	70.8*	32.0	27.0*	8.7	5.4*
1983	88.2	73.5*	37.5	29.5*	7.9	5.3*
1984(r)	116.1	94.4*	59.6	44.3*	10.9	7.1*
1985(p)	107.4	95.0*	52.1	42.1*	11.5	7.2*
In Constant 1972 Dollars (Billions)						
1965	$ 29.6	$27.1	$15.2	$14.3	$ 2.7	$1.8
1966	32.8	30.0	17.7	16.8	3.5	2.1
1967	30.0	29.6	14.8	16.3	3.1	1.9
1968	29.6	30.8	14.9	16.9	2.8	1.8
1969	33.6	33.7	17.0	17.9	3.4	1.8
1970	27.5	31.0	13.5	16.2	3.4	1.8
1971	23.9	28.9	11.5	14.8	2.8	1.9
1972	28.8	33.3	14.1	17.2	3.2	2.3
1973	41.6	46.7	21.0	23.9	4.1	3.1
1974	47.4	58.0	22.2	27.5	5.1	4.2
1975	34.6	55.3	12.6	23.9	2.9	3.9
1976	36.5	56.1	16.4	26.1	3.7	4.3
1977	43.7	62.3	18.5	28.6	3.6	4.4
1978	43.2	66.8	21.3	32.8	4.1	4.9
1979	52.5	74.6*	26.0	37.5*	6.2	6.1*
1980	58.5	82.6*	24.9	38.6*	5.3	5.9*
1981	55.0	83.5*	22.4	38.0*	6.7	7.0*
1982	43.7	72.7*	16.3	31.6*	4.4	5.4*
1983	44.7	74.0*	19.2	32.9*	4.0	5.4*
1984(r)	57.8	84.4*	29.7	40.2*	5.4	6.3*
1985(p)	52.9	84.7*	25.7	39.1*	5.7	6.3*

p – Preliminary estimate. r – Revised. * – Seasonally adjusted.

(a) These data are the results of The Conference Board's survey of the 1,000 largest U.S. manufacturers and pertain only to their domestic capital investment. This series is copyrighted by The Conference Board and can be reproduced only with their written permission.

Source: The Conference Board.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS (a)

Selected Industry Groups, 1980 to Date

(Millions of Dollars)

	1980		1981		1982	
Industry Group	Total	Machinery & Equipment	Total	Machinery & Equipment	Total	Machinery & Equipment
All Operating Manufacturing Establishments	$573,570	$433,995	$630,438	$479,233	NA	NA
Fabricated Metal Products	33,721	25,369	36,363	27,416	$39,886	NA
Nonelectrical Machinery	52,662	38,324	59,740	43,580	66,265	NA
Construction & Related Machinery	9,864	6,747	11,226	7,754	12,608	NA
Metalworking Machinery	6,546	4,996	7,269	5,552	7,473	$5,695
Metal Cutting Machine Tools	1,453	1,036	1,627	1,164	1,682	1.209
Metal Forming Machine Tools	612	444	636	456	742	540
Other Metalworking Machinery	4,481	3,516	5,007	3,932	5,049	3,946
Special Industrial Machinery	3,458	2,395	3,793	2,638	4,141	NA
General Industrial Machinery	7,378	5,490	8,191	6,106	9,189	NA
Office & Computing Machines	8,319	5,895	10,008	7,023	11,911	NA
Other Nonelectrical Machinery	17,097	12,801	9,914	7,569	20,943	NA
Electrical Machinery	35,278	25,340	40,430	29,051	46,979	NA
Transportation Equipment	45,636	32,814	53,361	39,437	58,000	NA
Instruments & Related Products	11,825	7,941	13,360	9,051	15,419	NA

NA – Not Available.

(a) Includes all fixed depreciable assets on the books of establishments at year end. Values represent actual cost of assets at the time they were acquired. Total includes all buildings, structures, machinery and equipment. Machinery and equipment includes production, office and transportation equipment.

Source: U.S. Bureau of the Census, 1982 "Census of Manufactures," "Annual Survey of Manufactures."

The tables appearing on this and the following page are included to provide some measure of the total stock of fixed assets in selected machine tool consuming industries. However, neither table presents an ideal measurement. Data in the "Gross Book Value" table include the total original cost of assets until the time they are fully depreciated. These are available only on an annual basis. The "Net Value" table is more current and is available on a quarterly basis but includes land, mineral rights, depletion, and amortization.

The data in the tables are not directly comparable due to these definitional differences in sample coverage and statistical methodology. For additional information on the gross book value of depreciable assets in the machine tool industry, see chapter 8.

NET VALUE OF PROPERTY, PLANT AND EQUIPMENT (a)

Selected Industry Groups, 1976 to Date

(Millions of Dollars)

Year: Qrt.	All Manufacturing	Fabricated Metal Products	Nonelectrical Machinery	Electrical Machinery	Transportation Equipment	Instruments and Related Products
1976:1	$287,362	$11,160	$23,342	$15,001	$21,669	$ 6,938
:2	293,435	11,149	23,786	15,155	21,673	6,990
:3	300,895	11,363	23,967	15,246	21,924	7,138
:4	307,360	11,469	24,745	15,452	21,927	7,210
1977:1	310,962	11,443	25,206	15,780	21,808	7,240
:2	318,941	11,797	25,940	15,735	22,513	7,417
:3	327,798	12,144	26,635	16,366	23,317	7,406
:4	339,809	12,286	27,805	17,051	24,369	7,555
1978:1	348,397	12,301	28,893	17,063	24,874	7,828
:2	357,773	12,720	29,803	17,551	26,074	7,820
:3	367,736	13,450	30,849	18,179	27,331	7,896
:4	382,953	14,208	32,168	19,175	28,883	8,162
1979:1	393,630	14,681	33,204	19,480	29,982	8,343
:2	405,188	15,213	34,931	20,048	31,289	8,631
:3	418,836	15,556	36,345	20,925	32,857	8,925
:4	441,415	15,597	39,093	22,222	34,130	9,447
1980:1	455,115	15,871	41,330	22,360	35,514	9,549
:2	468,348	16,309	42,619	23,204	36,913	9,826
:3	487,080	16,569	44,381	24,323	38,312	10,253
:4	515,022	18,607	46,718	26,186	39,861	10,761
1981:1	529,406	18,886	47,618	27,048	41,440	11,101
:2	547,707	19,391	49,446	28,072	42,533	11,491
:3	565,901	19,493	51,334	29,106	43,911	11,837
:4	586,077	19,846	54,078	30,817	44,746	12,425
1982:1	604,415	20,269	55,103	30,912	45,858	12,771
:2	618,376	20,952	56,950	31,808	46,481	13,047
:3	631,131	21,172	58,678	32,913	47,362	13,579
:4	643,348	21,688	59,010	33,407	48,240	13,939
1983:1	648,112	22,380	58,624	33,792	48,033	14,111
:2	653,660	21,964	58,452	33,735	47,702	14,372
:3	658,354	22,172	58,386	34,787	47,700	14,231
:4	663,282	21,464	50,403	35,921	49,406	14,797
1984:1	669,032	21,456	50,889	36,636	48,473	14,941
:2	678,085	21,814	51,033	37,804	49,622	15,164
:3	688,359	22,247	50,761	39,843	50,438	15,505
:4(r)	704,110	23,324	50,967	41,996	50,178	17,040
1985:1	703,569	23,249	51,305	42,107	51,284	18,026
:2	709,226	23,636	52,279	42,757	52,567	18,433
:3	714,467	23,375	52,554	42,273	54,421	18,844
:4(p)	721,160	23,963	53,071	43,266	55,624	19,368

p – Preliminary. r – Revised.

(a) Depreciable fixed assets including construction in progress, land and mineral rights less accumulated depreciation, depletion and amortization.

Source: Federal Trade Commission, "Quarterly Financial Report for Manufacturing Corporations" (Quarterly).

Net Value of Property, Plant and Equipment data are collected quarterly by extensive survey of manufacturing, mining and trade corporations. Each corporation is required to show gross receipts by source industry and is classified in the particular industry which accounts for the largest share of gross receipts. Please note that these procedures may lead to a conglomerate corporation being assigned to an industry from which only a small proportion of its receipts are obtained. For this reason, the above data should be used with caution.

INTEREST RATES CHARGED BY BANKS ON BUSINESS LOANS
Short-term Rates, 1970 to Date
(Percent per Annum)

Year	Average Annual Rate	February	May	August	November
1970	8.48%	8.86%	8.49%	8.50%	8.07%
1971(a)	6.48	6.59	6.01	6.51	6.18
1972	5.82	5.52	5.59	5.84	6.33
1973	8.30	6.52	7.35	9.24	10.06
1974	11.28	9.91	11.15	12.40	11.64
1975	8.65	9.94	8.16	8.22	8.29
1976	7.52	7.54	7.44	7.80	7.28
1977	7.85	7.48	7.37	7.87	8.66
1978	9.84	8.95	9.01	9.97	11.44
1979	13.18	12.27	12.34	12.31	15.81
1980	15.17	15.67	17.75	11.56	15.70
1981	19.56	19.91	19.99	21.11	17.23
1982	14.69	17.13	17.11	13.27	11.26
1983	10.64	10.20	10.31	11.09	10.95
1984	12.02	11.06	12.45	13.29	11.29
1985	9.74	10.10	9.90	9.27	9.68

(a) Statistical methodology changed in 1971. Net effect of the revision in February 1971 amounted to .16% decrease from 6.75% to 6.59%.

Source: Federal Reserve Board.

INTEREST RATES CHARGED BY BANKS ON BUSINESS LOANS
Long-term Rates, 1970 to Date
(Percent per Annum)

Year	Average Annual Rate	February	May	August	November
1970	8.47%	8.67%	8.25%	8.66%	8.31%
1971(a)	6.57	6.82	6.36	6.67	6.44
1972	6.12	5.64	5.87	6.31	6.67
1973	8.83	7.12	7.67	9.85	10.68
1974	11.70	10.16	11.41	13.08	12.16
1975	9.06	10.26	8.22	8.89	8.88
1976	7.99	8.02	8.02	8.45	7.48
1977	8.52	9.05	8.24	8.09	8.71
1978	10.11	9.19	9.67	10.20	11.38
1979	12.98	12.01	12.08	12.25	15.56
1980	15.32	15.79	18.37	12.06	15.07
1981	19.52	19.26	19.25	20.62	18.94
1982	15.25	16.59	16.96	15.22	12.24
1983	12.01	11.81	11.46	11.83	12.94
1984	12.89	11.92	13.12	13.81	12.69
1985	10.72	11.10	11.03	10.44	10.31

(a) Statistical methodology changed in 1971. Net effect of the revision in February 1971 amounted to .08% decrease from 6.90% to 6.82%.

Source: Federal Reserve Board.

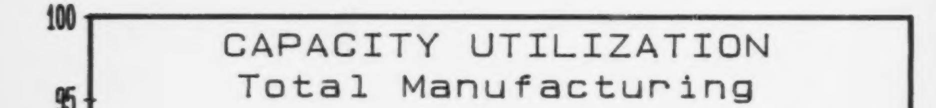
COMPARATIVE CAPACITY UTILIZATION MEASURES
Total Manufacturing, 1969 to Date

Year	Federal Reserve Board	Bureau of Economic Analysis	McGraw-Hill
1969	86.7%	85%	84.5%
1970	79.2	81	78.6
1971	77.4	80	77.8
1972	82.8	83	82.1
1973	87.0	86	85.9
1974	82.6	83	82.8
1975	72.3	77	73.3
1976	77.4	81	78.2
1977	81.4	83	80.4
1978	84.2	84	82.9
1979	84.6	83	83.9
1980	79.3	78	77.3
1981	78.3	76	77.7
1982	70.3	70	70.5
1983	74.0	74	74.1
1984	80.8	(a)	80.1
1985	80.3	(a)	78.7

(a) The publication of this data was discontinued in 1983.

Sources: Federal Reserve Board; U.S. Department of Commerce, Bureau of Economic Analysis; McGraw-Hill Publications Company.

For further explanation of "Capacity Utilization" see chapter introduction.



CAPACITY UTILIZATION IN MANUFACTURING
Federal Reserve Board, Operating Rates (a)
1968 to Date

Year	Total Mfg.	Total Durables	Electrical Machinery	Machinery, Except Electrical	Motor Vehicles(b)	Primary Metals	Fabricated Metals
1968	87.0%	86.7%	84.0%	85.1%	93.0%	86.6%	86.2%
1969	86.7	86.1	82.3	86.0	90.5	91.7	83.3
1970	79.2	76.1	73.5	77.9	68.8	83.0	74.4
1971	77.4	73.3	70.0	69.0	82.2	76.7	72.1
1972	82.8	79.7	76.8	77.6	86.0	85.8	77.4
1973	87.0	86.2	84.2	86.6	94.5	96.6	84.0
1974	82.6	81.6	79.9	87.1	78.4	92.1	78.8
1975	72.3	69.6	66.0	72.0	64.5	72.9	67.3
1976	77.4	74.8	71.6	72.7	81.1	80.7	74.0
1977	81.4	79.4	78.6	77.8	89.1	81.0	80.1
1978	84.2	82.9	83.3	82.1	89.0	87.0	83.8
1979	84.6	84.1	87.2	84.2	78.2	88.6	85.5
1980	79.3	77.9	84.6	79.2	57.8	74.7	78.4
1981	78.3	76.7	80.0	78.5	59.0	78.3	77.3
1982	70.3	66.9	70.5	67.0	54.3	54.2	65.4
1983	74.0	70.3	72.7	66.4	68.9	62.0	67.2
1984	80.8	79.0	80.2	76.5	82.5	72.5	77.4
1985	80.3	78.3	73.7	74.9	83.9	73.1	81.0
1981 1st Qtr.	79.5	78.0	81.3	79.0	59.3	83.9	77.8
2nd Qtr.	79.3	77.8	80.9	79.5	63.9	78.1	77.6
3rd Qtr.	79.0	77.5	80.7	79.7	59.6	80.2	78.6
4th Qtr.	75.3	73.3	77.3	75.9	53.3	71.0	75.0
1982 1st Qtr.	72.4	69.5	73.2	71.9	50.2	63.2	69.7
2nd Qtr.	70.8	67.8	71.8	67.9	58.1	53.6	66.4
3rd Qtr.	69.8	66.2	69.6	64.8	58.1	52.3	63.9
4th Qtr.	68.2	63.9	67.6	63.4	50.8	47.5	61.5
1983 1st Qtr.	70.2	66.0	68.6	62.4	59.4	55.2	63.3
2nd Qtr.	72.5	68.5	70.9	65.0	64.8	58.3	65.0
3rd Qtr.	75.8	72.1	74.1	68.3	72.7	64.5	68.7
4th Qtr.	77.4	74.5	77.2	70.0	78.6	69.9	71.7
1984 1st Qtr.	79.8	77.6	79.0	73.5	84.5	73.1	75.1
2nd Qtr.	80.8	78.8	79.9	76.7	81.4	72.2	77.0
3rd Qtr.	81.6	80.0	81.0	78.6	82.2	73.0	78.4
4th Qtr.	81.0	79.4	80.8	76.9	81.7	71.7	79.3
1985 1st Qtr.	80.5	79.0	77.2	75.9	84.9	73.1	80.8
2nd Qtr.	80.3	78.5	74.1	76.1	82.7	71.0	81.3
3rd Qtr.	80.3	78.1	71.5	75.0	84.9	72.9	80.7
4th Qtr.	80.0	77.7	71.9	72.6	83.1	75.2	81.2

(a) Quarterly data is seasonally adjusted.
(b) Includes Parts.

Source: Federal Reserve Board.

CAPACITY UTILIZATION IN MANUFACTURING
McGraw-Hill, Operating Rates, Seasonally Adjusted
1968 to Date

Year	Total Mfg.	Total Durables	Metal – Working Industries	Fabricated Metals	Electrical Machinery	Machinery, except Electrical	Motor Vehicles and Parts
1968	85.5%	84.7%	85.9%	84.7%	83.3%	85.4%	93.0%
1969	84.5	84.0	84.3	81.4	78.0	87.9	94.3
1970	78.6	75.1	73.3	72.5	67.3	79.6	74.0
1971	77.8	73.5	71.5	69.8	65.2	72.2	93.9
1972	82.1	78.7	76.8	72.6	70.9	77.5	103.5
1973	85.9	84.7	83.2	78.6	79.8	84.1	104.8
1974	82.8	80.9	79.6	78.5	78.6	84.1	76.7
1975	73.3	69.4	69.2	71.7	64.6	72.3	64.6
1976	78.2	75.0	74.2	77.8	73.2	75.0	76.1
1977	80.4	78.2	78.1	78.5	78.1	77.0	87.0
1978	82.9	81.5	81.4	81.8	82.0	81.1	85.5
1979	83.9	83.0	83.6	84.8	84.1	85.6	78.5
1980	77.3	74.6	76.1	75.3	76.6	81.3	59.3
1981	77.7	75.3	75.6	77.8	79.7	80.6	62.7
1982	70.5	66.0	67.7	65.0	74.1	68.0	59.1
1983	74.1	70.1	70.4	68.3	75.5	67.3	73.0
1984(r)	80.1	78.3	78.6	76.8	81.1	78.2	85.4
1985	78.7	76.5	77.3	75.8	72.3	78.1	87.3
1981 1st Qtr.	78.6	76.2	75.8	79.7	79.0	81.4	60.9
2nd Qtr.	78.8	76.8	77.2	79.7	80.3	81.7	68.6
3rd Qtr.	78.8	76.5	76.7	78.8	81.0	82.0	64.7
4th Qtr.	74.6	71.5	72.6	73.0	78.4	77.1	56.7
1982 1st Qtr.	71.9	68.1	69.2	68.0	76.1	72.5	52.7
2nd Qtr.	70.9	67.0	69.0	65.9	75.4	68.8	63.4
3rd Qtr.	70.5	66.0	67.8	64.8	73.5	66.8	64.0
4th Qtr.	68.6	63.0	64.9	61.5	71.2	63.9	56.1
1983 1st Qtr.	70.0	65.2	66.8	63.3	71.6	62.5	63.7
2nd Qtr.	72.9	68.5	68.5	66.4	74.3	65.8	69.2
3rd Qtr.	76.3	72.2	72.0	71.2	76.7	69.8	77.3
4th Qtr.	77.6	74.4	74.1	72.4	79.4	71.3	81.8
1984 1st Qtr.(r)	79.5	77.5	77.3	74.9	81.6	74.6	87.0
2nd Qtr.(r)	80.3	78.3	78.2	76.6	81.4	77.4	84.6
3rd Qtr.(r)	80.9	79.2	79.9	77.9	81.7	80.7	85.3
4th Qtr.(r)	79.6	78.2	79.2	77.5	79.7	80.1	84.6
1985 1st Qtr.(r)	79.1	77.7	78.9	77.7	75.9	79.5	87.8
2nd Qtr.	78.8	76.7	77.7	76.8	72.7	79.5	85.9
3rd Qtr.	78.7	76.2	76.9	74.8	70.1	78.1	88.6
4th Qtr.	78.2	75.4	75.6	74.0	70.3	75.2	87.0
1986 1st Qtr.	78.0	74.8	74.7	73.2	68.3	74.2	87.4

r – Revised.

Source: McGraw-Hill Publications Company.

INDUSTRIAL PRODUCTION INDEXES

Major and Selected Industry Groupings, 1965 to Date

1977 = 100 (Quantity of Output Basis)

Year	Total Industrial Production	Total Manufacturing	Durables	Primary Metals	Fabricated Metal Products	Nonelectrical Machinery
1965	66.1	65.7	68.6	NA	73.6	58.2
1966	72.0	71.7	76.2	NA	78.8	67.6
1967	73.5	73.1	77.0	91.4	82.5	68.9
1968	77.6	77.2	80.8	94.7	86.9	69.5
1969	81.2	80.6	84.0	101.9	88.4	75.2
1970	78.5	77.0	77.6	94.8	81.9	72.8
1971	79.6	78.2	77.3	89.9	81.5	67.6
1972	87.3	86.4	86.3	100.7	89.4	78.5
1973	94.4	94.0	96.3	114.3	99.4	91.7
1974	93.0	92.6	94.3	110.7	95.4	97.7
1975	84.8	83.4	82.6	88.2	82.7	84.5
1976	92.6	91.9	91.1	98.7	91.6	88.8
1977	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.5	107.1	108.2	107.0	105.7	111.7
1979	110.7	111.5	113.9	108.5	109.4	122.6
1980	108.6	108.2	109.1	90.4	101.8	123.3
1981	111.0	110.5	111.1	95.0	101.6	129.8
1982	103.1	102.2	99.9	65.8	86.6	115.6
1983	109.2	110.2	107.7	73.0	89.1	118.3
1984	121.8	123.9	124.8	82.4	102.8	142.0
1985	124.6	127.1	128.2	80.6	107.9	146.4

NA – Not Available.

Source: Federal Reserve Board.

INDUSTRIAL PRODUCTION INDEXES

(Continued)

Year	Electrical Machinery	Transportation Equipment	Motor Vehicles and Parts	Aerospace and Misc.	Instruments
1965	53.5	79.4	67.3	101.3	43.1
1966	64.2	85.1	66.2	121.5	47.3
1967	64.5	83.2	58.2	132.5	51.4
1968	68.1	90.4	69.7	130.0	56.6
1969	72.5	89.7	70.0	127.0	60.8
1970	69.3	75.3	56.3	111.9	60.3
1971	69.6	81.5	70.6	100.4	63.2
1972	79.7	87.0	77.1	103.7	70.9
1973	90.7	99.1	89.8	114.7	80.9
1974	89.8	90.1	77.5	111.3	85.7
1975	77.2	81.0	65.7	106.7	81.4
1976	86.8	92.2	86.5	101.7	89.4
1977	100.0	100.0	100.0	100.0	100.0
1978	112.9	106.3	104.6	108.7	111.5
1979	125.7	108.3	95.9	125.1	118.7
1980	130.3	96.9	71.1	132.0	122.0
1981	134.1	95.1	71.6	127.0	126.3
1982	128.4	87.6	66.8	115.7	125.3
1983	143.8	99.2	85.8	117.4	123.2
1984	172.4	113.6	105.6	124.4	136.9
1985	169.3	123.2	112.8	137.5	139.8

Source: Federal Reserve Board.

PRODUCTIVITY IN MANUFACTURING (r)

Indexes, 1947 to Date

1977 = 100

Year	Productivity (a) (Output Per Hour of All Persons)	Constant Dollar Output	Hours (All Persons)	Compensation Per Hour		Unit Labor Costs
				Current	Real (b)	
1947	43.9	35.0	79.9	17.5	47.4	39.8
1948	45.1	37.0	79.4	19.4	49.0	41.8
1949	48.5	35.1	72.4	20.3	51.7	41.9
1950	51.1	40.0	78.2	21.4	53.8	41.8
1951	53.1	44.7	84.2	23.5	54.8	44.3
1952	54.1	46.2	85.4	25.0	57.2	46.3
1953	55.3	49.6	89.8	26.4	59.8	47.8
1954	56.0	46.0	82.1	27.6	62.3	49.3
1955	58.7	50.8	86.6	28.7	64.9	48.9
1956	58.3	51.3	87.9	30.5	68.0	52.3
1957	59.6	51.5	86.5	32.3	69.6	54.2
1958	59.3	47.0	79.4	33.8	70.8	57.0
1959	61.9	52.4	84.6	35.1	72.9	56.6
1960	62.2	52.5	84.4	36.5	74.7	58.7
1961	64.0	52.6	82.3	37.5	76.0	58.7
1962	66.7	57.1	85.6	39.0	78.1	58.5
1963	71.2	61.6	86.5	40.2	79.4	56.4
1964	74.6	66.0	88.4	41.8	81.6	56.0
1965	76.6	71.7	93.6	42.7	81.9	55.7
1966	77.4	77.2	99.7	44.6	83.2	57.6
1967	77.4	77.0	99.5	46.8	85.0	60.5
1968	79.8	80.9	101.4	50.2	87.4	62.8
1969	80.8	83.2	103.0	53.7	88.7	66.4
1970	80.8	78.6	97.3	57.3	89.4	70.9
1971	85.3	79.9	93.7	60.8	91.0	71.3
1972	89.0	87.0	97.7	64.2	92.9	72.1
1973	93.4	96.3	103.1	68.8	93.8	73.7
1974	90.6	91.7	101.2	76.2	93.6	84.1
1975	92.9	84.9	91.4	85.1	95.9	91.7
1976	97.1	93.1	95.9	92.1	98.1	94.9
1977	100.0	100.0	100.0	100.0	100.0	100.0
1978	101.5	106.0	104.4	108.2	100.5	106.6
1979	101.4	108.1	106.5	118.6	99.1	117.0
1980	101.4	103.2	101.7	132.4	97.4	130.6
1981	103.6	104.8	101.1	145.2	96.7	140.1
1982	105.9	98.4	92.9	157.5	98.9	148.7
1983	112.9	105.6	93.5	163.2	99.3	144.5
1984	118.5	117.9	99.5	169.1	98.7	142.8
1985	121.8	121.0	99.3	176.6	99.5	145.0
1985						
1st Qtr.	120.0	119.9	99.9	174.3	99.5	145.3
2nd Qtr.	121.8	120.5	98.9	176.1	99.5	144.5
3rd Qtr.	122.8	121.4	98.9	177.3	99.6	144.4
4th Qtr.	122.4	122.0	99.6	178.8	99.4	146.0
1986						
1st Qtr.	123.1	122.7	99.7	179.2	99.3	145.6

r – Revised.

(a) The productivity index is obtained by dividing the constant dollar output index by the labor input (hours) index.

(b) Compensation per hour adjusted for changes in the Consumer Price Index.

Source: U.S. Bureau of Labor Statistics.

This table is based on output and compensation data published by the Commerce Department's Bureau of Economic Analysis. The indexes for manufacturing output, which are based on figures taken from Gross National Product components, vary from those for manufacturing production in the tables of industrial production indexes. The latter are generated independently by the Federal Reserve Board from their own survey and using their own methodology.

SELECTED LEADING BUSINESS CYCLE INDICATORS
1951 to Date

		Selected Leading Indicators					
	Composite 12 Leading Indicators	Average Workweek, Mfg.	Layoff Rate, Mfg.	New Orders Consumer Goods	Orders for Plant & Equipment	Net Change in Inventories	Change in Sensitive Prices
Year	1967 = 100	Hours	Per 100 Employees	$82 Billion	$82 Billion	$82 Billion Annual Rate	Percent
1951	56.0	40.6	1.4	$36.68	$10.92	30.8	-0.5
1952	57.1	40.7	1.4	36.10	9.24	10.0	-0.8
1953	67.9	40.5	1.6	37.14	8.77	2.8	-0.5
1954	58.6	39.6	2.3	34.67	7.31	-4.8	0.3
1955	66.6	40.7	1.5	44.48	9.98	16.3	0.5
1956	66.5	40.4	1.7	40.94	10.50	12.9	-0.1
1957	64.5	39.8	2.1	38.91	8.94	3.0	-0.6
1958	65.7	39.2	2.6	36.96	8.03	-3.4	0.3
1959	73.1	40.3	2.0	43.19	9.52	16.5	0.3
1960	71.3	39.7	2.4	40.66	9.28	7.7	-0.5
1961	75.2	39.8	2.2	42.79	9.47	7.3	0.1
1962	79.6	40.4	2.0	45.55	10.28	16.2	-0.2
1963	84.5	40.5	1.8	48.89	11.27	16.6	0.1
1964	90.6	40.7	1.7	53.05	14.38	15.7	0.5
1965	96.0	41.2	1.4	57.97	15.74	25.2	0.1
1966	99.0	41.4	1.2	61.72	18.17	36.9	-0.3
1967	100.0	40.6	1.4	60.89	16.74	28.8	-0.1
1968	107.2	40.7	1.2	80.59	22.09	21.0	0.5
1969	111.1	40.6	1.2	67.50	23.67	25.1	0.6
1970	105.5	39.8	1.8	61.56	20.47	8.2	-0.4
1971	113.5	39.9	1.6	64.27	21.48	19.6	0.4
1972	125.0	40.5	1.1	72.61	23.59	21.8	1.0
1973	132.2	40.7	0.9	80.89	29.25	40.0	2.3
1974	121.2	40.0	1.5	74.50	29.13	33.3	-0.1
1975	115.7	39.5	2.1	63.96	22.03	-12.8	-0.3
1976	130.9	40.1	1.3	73.01	24.72	22.1	1.1
1977	139.4	40.3	1.1	65.15	27.28	29.1	0.4
1978	145.8	40.4	0.9	85.18	31.70	36.8	1.3
1979	145.1	40.2	1.1	83.59	33.82	15.0	0.9
1980	138.2	39.7	1.7	74.26	29.97	-6.9	0.1
1981	140.9	39.8	1.5	73.96	29.28	23.9	-0.6
1982	136.8	38.9	NA	65.15	24.77	-24.5	-0.7
1983(r)	156.0	40.1	NA	75.21	27.03	5.5	1.0
1984(p)	165.7	40.7	NA	82.28	31.85	62.7	-0.2
1985(p)	168.7	40.5	NA	84.60	32.60	5.7	-0.4
1985 1st Qtr.(p)	167.1	40.4	NA	84.07	32.10	15.8	0.7
2nd Qtr.(p)	166.3	40.3	NA	83.52	31.40	15.1	0.3
3rd Qtr.(p)	169.0	40.5	NA	84.53	33.47	-1.8	-0.4
4th Qtr.(p)	172.2	40.8	NA	86.28	33.10	-6.3	-0.2
1986 1st Qtr.(a,p)	175.5	40.8	NA	86.78	31.35	26.0	-0.3

NA – Not Available. p – Preliminary. r – Revised.

(a) Includes data for January and February.
(b) January preliminary data only.

Note: New orders, plant and equipment orders, and change in inventory data are based in 1982 dollars.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, "Business Conditions Digest" (monthly).

Twelve economic indicators normally precede changes in the business year. These are the "leading indicators," six of which are shown separately in the table together with the composite of the 12.

BUSINESS CYCLE REFERENCE DATES
1854 to Date

Trough		Peak		Expansion Duration (in Months) (a)
Dec.	1854	June	1857	30
Dec.	1858	Oct.	1860	22
June	1861	Apr.	1865	46(b)
Dec.	1867	June	1869	18
Dec.	1870	Oct.	1873	34
Mar.	1879	Mar.	1882	36
May	1885	Mar.	1887	22
Apr.	1888	July	1890	27
May	1891	Jan.	1893	20
June	1894	Dec.	1895	18
June	1897	June	1899	24
Dec.	1900	Sept.	1902	21
Aug.	1904	May	1907	33
June	1908	Jan.	1910	19
Jan.	1912	Jan.	1913	12
Dec.	1914	Aug.	1918	44(b)
Mar.	1919	Jan.	1920	10
July	1921	May	1923	22
July	1924	Oct.	1926	27
Nov.	1927	Aug.	1929	21
Mar.	1933	May	1937	50
June	1938	Feb.	1945	80(b)
Oct.	1945	Nov.	1948	37
Oct.	1949	July	1953	45(b)
May	1954	Aug.	1957	39
Apr.	1958	Apr.	1960	24
Feb.	1961	Dec.	1969	106(b)
Nov.	1970	Nov.	1973	36
Mar.	1975	Jan.	1980	58
July	1980	July	1981	12
Nov.	1982			
Average Peacetime Cycles:				
25 cycles, 1854 – 1981				27
11 cycles, 1919 – 1981				31
6 cycles, 1945 – 1981				34

(a) Time period from trough to peak.
(b) Wartime expansions (Civil War, World War I and II, Korean War and Vietnam War.)

Source: National Bureau of Economic Research, Inc.

The historical business cycle turning dates, above, are those designated by the National Bureau of Economic Research, Inc. (NBER). They mark the approximate dates when, according to the NBER, aggregate economic activity reached its cyclical high (peak) or low (trough) levels.

MANUFACTURERS' INVENTORIES
Major Industry Groups, 1970 to Date
(Book Value in Billions of Dollars, Seasonally Adjusted)

			By Industry Group		By Capital Goods Industries	
As of Dec. 31	Total Manufacturing	Durables	Primary Metals	ªFabricated Metal Products	Nondefense	Defense
1970	$101.7	$ 66.8	$ 9.0	$ 7.8	$24.6	$ 4.9
1971	102.7	66.3	9.1	8.0	24.2	4.0
1972	108.2	70.3	9.6	8.5	25.3	4.3
1973	124.6	81.4	10.0	9.9	29.8	4.5
1974	157.8	101.7	13.4	13.4	37.5	4.9
1975	159.9	102.9	15.7	13.1	37.1	5.7
1976	175.2	112.6	17.6	14.4	37.7	6.5
1977	189.2	121.6	18.2	15.6	41.6	6.1
1978	210.5	137.9	19.4	17.3	49.4	6.4
1979	241.1	160.5	22.4	19.2	60.0	8.4
1980	264.3	174.6	23.0	19.6	68.5	10.7
1981	282.6	186.3	25.8	20.3	73.0	13.4
1982	264.9	175.1	21.6	17.7	70.2	16.0
1983	260.7	171.6	19.4	17.8	65.4	17.8
1984	285.7	191.1	20.6	19.3	72.3	22.5
1985	281.9	189.2	17.8	19.4	70.5	26.3

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories and Orders: 1978 – 1984" and Series M3-1 (monthly).

MANUFACTURERS' INVENTORIES
Major Industry Groups, 1970 to Date
(Book Value in Billions of Dollars, Seasonally Adjusted)

As of Dec. 31	Nonelectrical Machinery	Electrical Machinery	Motor Vehicles and Parts	Other Transportation Equipment	Instruments and Related Products
1970	$14.4	$ 9.8	$ 4.2	$10.4	$2.9
1971	14.2	9.4	4.2	9.6	3.0
1972	15.1	9.9	4.7	10.1	3.2
1973	18.4	12.1	5.8	10.7	3.8
1974	24.1	14.0	6.7	12.5	4.9
1975	24.1	13.0	6.1	13.5	4.8
1976	25.3	14.5	8.0	13.1	5.4
1977	27.3	16.4	9.2	13.3	6.0
1978	31.7	18.9	10.3	15.8	6.9
1979	37.1	23.0	10.9	20.7	7.9
1980	40.7	25.9	9.9	26.1	9.1
1981	43.5	28.4	9.1	28.5	9.7
1982	40.1	26.6	8.3	32.1	9.2
1983	36.8	28.2	9.4	31.0	9.0
1984	40.7	32.8	11.2	36.2	9.4
1985	39.4	33.5	11.5	37.5	9.6

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories and Orders: 1978 – 1984" and Series M3-1 (monthly).

MANUFACTURERS' NET NEW ORDERS
Major Industry Groups, 1970 to Date
(Billions of Dollars)

Year	Total Manufacturing	Durables	By Industry Group: Primary Metals	By Industry Group: Fabricated Metal Products	By Capital Goods Industries: Nondefense	By Capital Goods Industries: Defense
1970	$ 624.8	$ 329.0	$ 51.8	$ 44.4	$ 81.6	$21.5
1971	671.9	360.1	51.3	44.4	90.2	19.0
1972	770.0	420.8	61.4	52.9	103.5	20.8
1973	915.1	515.2	80.8	64.8	131.7	23.7
1974	1,047.2	562.2	99.0	74.4	152.1	25.7
1975	1,021.8	504.2	74.1	64.4	132.1	24.8
1976	1,194.5	616.8	94.5	76.2	153.6	31.1
1977	1,380.4	733.0	105.5	91.5	183.5	35.2
1978	1,578.6	868.1	124.6	104.6	233.5	41.8
1979	1,768.8	953.4	139.6	116.6	278.8	34.1
1980	1,873.9	952.3	134.1	115.3	279.1	58.7
1981	2,013.0	1,002.6	137.0	122.4	288.6	59.1
1982	1,887.1	899.9	101.0	106.8	248.2	75.4
1983	2,079.1	1,051.6	123.4	119.5	273.2	81.6
1984	2,299.6	1,207.3	129.3	140.3	324.2	89.7
1985	2,349.7	1,251.6	126.5	167.7	326.4	96.5

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories, and Orders: 1978 – 1984" and Series M3-1 (monthly).

MANUFACTURERS' UNFILLED ORDERS
Major Industry Groups, 1970 to Date
(Billions of Dollars, Seasonally Adjusted)

As of Dec. 31	Total Manufacturing	Durables	By Industry Group: Primary Metals	By Industry Group: Fabricated Metal Products	By Capital Goods Industries: Nondefense	By Capital Goods Industries: Defense
1970	$105.9	$101.3	$ 7.7	$14.9	$ 47.8	$ 20.2
1971	106.8	101.7	7.4	13.5	49.4	19.6
1972	121.1	114.7	10.3	15.1	54.6	16.7
1973	161.3	153.9	18.5	21.1	70.5	22.0
1974	191.1	185.6	21.9	28.2	86.8	26.3
1975	173.8	165.9	15.1	24.1	79.4	28.1
1976	182.5	174.2	16.8	23.0	81.7	32.0
1977	203.5	195.0	17.2	24.5	90.9	37.2
1978	259.8	249.5	23.9	27.8	117.0	47.7
1979	302.1	290.9	26.1	30.9	149.2	49.0
1980	323.4	312.6	26.3	30.1	156.0	67.1
1981	319.1	309.1	21.4	28.9	146.9	78.1
1982	296.9	287.8	15.2	21.6	123.3	96.6
1983	330.9	320.1	20.9	20.5	124.1	112.8
1984	355.6	345.4	19.1	21.7	133.9	129.8
1985	363.8	353.0	19.7	20.4	133.8	141.5

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories, and Orders: 1978 – 1984" and Series M3-1 (monthly).

MANUFACTURERS' NET NEW ORDERS
Selected Industry Groups, 1970 to Date
(Billions of Dollars)

Year	Nonelectrical Machinery	Electrical Machinery	Aircraft and Parts	Other Transportation Equipment	Machine Tools
1970	$ 54.9	$ 47.0	$ 17.4	$ 50.0	$ .9
1971	56.1	48.5	22.5	67.4	.9
1972	70.9	54.1	21.0	75.5	1.4
1973	89.2	64.7	26.7	91.5	2.6
1974	105.3	67.8	29.9	84.1	2.6
1975	92.7	62.8	26.9	82.2	1.3
1976	107.4	77.0	31.9	111.7	2.2
1977	126.7	92.5	40.8	134.1	3.0
1978	154.5	106.8	54.9	158.2	4.3
1979	174.6	121.6	68.3	154.2	5.6
1980	180.6	135.6	73.1	129.0	4.8
1981	200.5	144.7	64.1	139.6	2.9
1982	162.9	147.6	67.7	132.9	1.5
1983	180.9	165.6	81.9	172.1	1.7
1984	213.0	191.3	93.2	208.3	2.9
1985	210.6	189.0	101.6	168.2	2.5

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories, and Orders: 1978 – 1984" and Series M3-1 (monthly); NMTBA "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments, and Backlog" (monthly).

MANUFACTURERS' UNFILLED ORDERS
Selected Industry Groups, 1970 to Date
(Billions of Dollars)

As of Dec. 31	Nonelectrical Machinery	Electrical Machinery	Aircraft and Parts	Other Transportation Equipment	Machine Tools
1970	$22.1	$16.6	$ 26.3	$ 8.6	$ .7
1971	22.2	17.2	26.4	9.6	.6
1972	27.5	18.0	26.2	11.5	1.0
1973	38.9	22.0	27.8	17.4	2.1
1974	51.9	24.0	30.4	20.6	2.6
1975	48.9	22.7	28.1	18.4	1.5
1976	50.8	25.9	28.9	19.6	1.6
1977	55.4	30.1	37.3	19.1	2.3
1978	66.8	36.5	54.8	26.0	3.6
1979	75.0	42.2	75.1	27.0	5.4
1980	74.8	49.3	89.7	27.9	5.5
1981	73.8	53.8	89.1	27.0	3.3
1982	55.8	60.3	93.1	28.2	1.2
1983	58.4	70.1	103.8	30.6	1.0
1984	61.3	78.9	119.9	27.7	1.7
1985	59.4	82.3	130.8	23.3	1.7

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories, and Orders: 1978 – 1984" and Series M3-1 (monthly); NMTBA "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments, and Backlog" (monthly).

MANUFACTURERS' SHIPMENTS
Major Industry Groups, 1970 to Date
(Billions of Dollars)

			By Industry Group		By Capital Goods Industries	
Year	Total Manufacturing	Durables	Primary Metals	Fabricated Metal Products	Nondefense	Defense
1970	$ 634.0	$ 338.6	$ 52.0	$ 44.5	$ 87.5	$23.8
1971	671.1	359.7	51.6	45.7	88.5	19.7
1972	756.3	408.3	58.4	51.5	97.9	20.2
1973	875.2	476.2	72.7	58.9	115.8	21.4
1974	1,017.5	530.7	95.6	67.3	135.9	21.3
1975	1,039.1	523.9	80.8	68.5	139.6	23.0
1976	1,185.6	608.3	93.0	77.4	151.4	26.7
1977	1,358.4	711.2	103.2	90.0	174.5	30.1
1978	1,522.9	814.2	118.1	101.3	207.6	31.2
1979	1,727.2	912.7	137.4	113.6	247.1	32.9
1980	1,852.7	930.6	133.9	116.2	272.4	40.6
1981	2,017.5	1,006.5	141.9	123.7	297.7	48.2
1982	1,908.3	920.3	107.0	114.0	271.3	56.7
1983	2,045.3	1,019.4	117.9	120.6	272.3	65.2
1984	2,274.9	1,182.0	131.2	139.2	314.5	72.5
1985	2,341.2	1,246.3	125.7	169.1	326.6	84.6

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories, and Orders: 1978 – 1984" and Series M3-1 (monthly).

MANUFACTURERS' SHIPMENTS
Major Industry Groups, 1970 to Date
(Billions of Dollars)

Year	Nonelectrical Machinery	Electrical Machinery	Motor Vehicles and Parts	Other Transportation Equipment	Instruments and Related Products	Machine Tools
1970	$ 56.5	$ 47.2	$ 42.5	$ 32.0	$13.1	$1.4
1971	56.0	48.0	58.2	30.6	13.5	1.0
1972	65.8	53.4	63.9	30.8	15.5	1.0
1973	77.8	60.9	74.8	35.8	17.9	1.5
1974	92.5	65.8	68.6	39.6	21.0	2.0
1975	95.8	64.2	70.0	43.5	22.1	2.5
1976	105.5	73.9	95.4	45.6	25.0	2.1
1977	122.2	88.4	117.7	49.2	28.9	2.3
1978	143.2	100.5	132.0	56.8	33.7	3.0
1979	166.5	116.0	131.4	70.2	37.7	3.9
1980	160.7	128.6	104.6	82.0	44.1	4.7
1981	201.5	140.2	117.0	88.2	48.3	5.1
1982	180.6	141.1	112.2	82.9	46.9	3.6
1983	178.3	156.0	151.9	88.6	47.9	1.8
1984	210.2	182.5	191.5	96.8	53.5	2.3
1985	212.6	185.6	203.4	109.8	56.7	2.5

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories, and Orders: 1978 – 1984" and Series M3-1 (monthly); NMTBA, "Industry Estimate of Machine Tool New Orders, Shipments, and Backlog" (monthly).

SHIPMENTS: METALWORKING MACHINERY AND MACHINE TOOLS

Monthly, 1980 to Date

(Millions of Dollars, Not Seasonally Adjusted)

Month	1980	1981	1982	1983	1984	1985
Metalworking Machinery Industry (SIC 354) (a)						
Jan.	$ 822	$ 885	$ 916	$ 638	$ 692	$ 700
Feb.	994	1,091	953	645	789	839
Mar.	1,087	1,150	987	670	876	1,001
Apr.	898	1,018	817	618	814	778
May	933	971	789	623	824	828
June	1,077	1,114	888	642	855	953
July	763	860	719	563	726	800
Aug.	835	930	764	640	775	774
Sept.	1,009	1,115	772	773	917	957
Oct.	1,021	1,029	681	759	943	999
Nov.	1,002	912	659	713	807	860
Dec.	1,077	943	676	731	959	1,005
TOTAL	$11,518	$12,018	$9,621	$8,015	$9,977	$10,494
Machine Tools (SIC 3541 & 3542) (b)						
Jan.	$ 331	$ 389	$ 384	$ 153	$ 113	$ 138
Feb.	355	422	360	158	147	166
Mar.	460	477	411	176	189	228
Apr.	343	448	303	151	159	170
May	375	411	296	136	210	177
June	476	509	409	183	204	239
July	327	367	250	112	194	195
Aug.	311	325	257	113	164	216
Sept.	411	442	276	132	211	244
Oct.	440	407	201	145	208	199
Nov.	400	406	194	148	212	199
Dec.	463	491	264	238	276	347
TOTAL	$4,692	$5,096	$3,604	$1,845	$2,286	$2,545

(a) Adjusted for trading-day and calendar month variation.

(b) Shipments of new machine tools and accessories ordered with them.

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories and Orders: 1978 – 84" and Series M3-1 (monthly). NMTBA "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

The cyclical nature of the machine tool industry is apparent in both new orders and shipment figures. Shipments totaled almost $2.5 billion by 1975, dropped by 16% in 1976, and grew to almost $5.1 billion in 1981. In 1982 shipments fell 29% and declined another 49% to $1.8 billion in 1983. In 1984 and 1985 shipments rose 24% and 11%, respectively.

NET NEW ORDERS: METALWORKING MACHINERY AND MACHINE TOOLS

Monthly, 1980 to Date

(Millions of Dollars, Not Seasonally Adjusted)

Month	1980	1981	1982	1983	1984	1985
Metalworking Machinery Industry (SIC 354) (a)						
Jan.	$ 1,056	$ 898	$ 681	$ 498	$ 798	$ 815
Feb.	1,210	948	602	608	884	953
Mar.	1,282	1,059	597	602	910	1,116
Apr.	921	880	541	610	862	902
May	860	742	562	653	943	889
June	1,064	891	755	681	905	1,079
July	764	648	529	626	1,123	979
Aug.	664	807	640	764	955	784
Sept.	943	781	525	728	1,018	954
Oct.	900	790	566	835	897	988
Nov.	806	648	523	751	877	690
Dec.	970	475	538	637	1,074	580
TOTAL	$11,440	$9,567	$7,059	$7,993	$11,246	$10,729
Machine Tools (SIC 3541 & 3542) (b)						
Jan.	—	$ 291	$ 205	$ 92	$ 189	$ 211
Feb.	—	280	164	98	203	238
Mar.	$1,517	350	138	126	208	279
Apr.	—	320	151	119	253	184
May	—	229	106	135	320	223
June	1,335	318	126	145	192	235
July	—	192	107	175	313	200
Aug.	—	214	87	137	201	185
Sept.	818	187	87	156	286	174
Oct.	—	216	119	203	284	230
Nov.	—	196	88	160	212	195
Dec.	984	152	121	151	255	175
TOTAL	$4,754	$2,945	$1,498	$1,696	$2,916	$2,529

(a) Adjusted for trading-day and calendar month variation.
(b) Net new orders for new machine tools and accessories ordered with them.

Note: Individual items may not add to totals due to rounding.

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories and Orders: 1978-84" and Series M3-1 (monthly). NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

The most dramatic indicator of the cyclical nature of the machine tool business is new orders. These generally follow the overall movement of the economy but the cycles involved are much more pronounced. For example, in 1975 new orders were only 45% of the level experienced in 1973. However, the economic recovery following the 1974 recession was especially strong in the machine tool sector and by 1979 orders were running at record levels, well in excess of $5 billion per year. This strength in machine tool orders continued into early 1980, and then began a long, steady decline until late 1982. As a mark of the severity of the recession, machine tool orders for 1982 were only 27% of their 1979 record total. Monthly order placements demonstrated gradual improvement throughout 1983, but still ended up only 13% ahead of 1982. However, in 1984 there was a dramatic increase of 72% to 2.9 billion and fell 13% in 1985. The failure of the industry to experience a recovery in step with the general economy has threatened the future of many domestic machine tool building firms.

UNFILLED ORDERS: METALWORKING MACHINERY AND MACHINE TOOLS

Monthly, 1980 to Date

(Millions of Dollars, Not Seasonally Adjusted)

Month	1980	1981	1982	1983	1984	1985
Metalworking Machinery Industry (SIC 354) (a)						
Jan.	$7,721	$7,422	$4,723	$2,256	$2,480	$3,758
Feb.	7,937	7,279	4,372	2,219	2,575	3,872
Mar.	8,132	7,188	3,982	2,151	2,609	3,987
Apr.	8,155	7,050	3,706	2,143	2,657	4,111
May	8,082	6,821	3,479	2,173	2,776	4,172
June	8,069	6,598	3,346	2,212	2,826	4,298
July	8,070	6,386	3,156	2,275	3,223	4,477
Aug.	7,899	6,263	3,032	2,399	3,403	4,487
Sept.	7,833	5,929	2,765	2,354	3,504	4,484
Oct.	7,712	5,690	2,670	2,430	3,458	4,473
Nov.	7,516	5,426	2,534	2,468	3,528	4,303
Dec.	7,409	4,958	2,396	2,374	3,643	3,878
Machine Tools (SIC 3541 & 3542) (b)						
Jan.	—	$5,353	$3,122	$1,133	$1,121	$1,748
Feb.	—	5,211	2,926	1,072	1,176	1,840
Mar.	$5,760	5,083	2,653	1,021	1,196	1,871
Apr.	—	4,956	2,500	989	1,290	1,885
May	—	4,773	2,310	988	1,400	1,930
June	5,902	4,583	2,027	950	1,388	1,927
July	—	4,408	1,883	1,013	1,507	1,932
Aug.	—	4,296	1,713	1,037	1,544	1,900
Sept.	5,770	4,042	1,524	1,062	1,619	1,830
Oct.	—	3,852	1,442	1,119	1,695	1,861
Nov.	—	3,639	1,337	1,131	1,695	1,857
Dec.	5,451	3,300	1,194	1,045	1,675	1,658

(a) Adjusted for trading-day and calendar month variation.
(b) Net new orders for new machine tools and accessories ordered with them.

Sources: U.S. Bureau of the Census, "Manufacturers' Shipments, Inventories and Orders: 1978-84" and Series M3-1 (monthly). NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

Because they must incorporate a variety of customer-specified options, machine tools are generally "built to order" rather than being built for inventory. This order-taking procedure results in the backlog of unfilled orders, machines ordered by customers but not yet shipped, for which statistics appear above. The backlog of unfilled orders for machine tools, which had increased continuously for four years, peaked in mid-1980 at just over $5.6 billion. The slack pace of the economy since then saw the accumulated volume of unfilled orders drop to just $1.0 billion by the end of 1983. The order recovery in 1984 led to a sharp increase for the year but total outstanding unfilled order levels in 1984 and 1985 were nonetheless in line with prevailing shipping rates.

PRODUCER PRICE INDEXES
For Selected Machine Tool Materials and Components
1967 = 100, unless otherwise indicated

Commodity	1977	1978	1979	1980	1981	1982	1983	1984(r)	1985
Finished Goods	180.6	194.6	216.1	247.0	269.8	280.7	285.2	291.1	293.7
All Commodities	194.2	209.3	235.6	268.8	293.4	299.3	303.1	310.3	308.7
Industrial Commodities	195.1	209.4	236.5	274.8	304.1	312.3	315.7	322.6	323.8
Manufactured Durables	188.1	204.7	226.1	250.8	269.7	279.8	287.3	293.9	296.1
Industrial Power, 500 KW Demand	257.0	279.5	305.3	368.1	422.2	473.1	487.8	512.8	533.4
Lubricating Oil Materials	304.3	349.5	477.9	756.4	873.6	877.2	787.5	796.5	NA
Prepared Paint	182.4	192.3	204.4	235.3	249.8	262.8	264.7	272.5	276.8
Iron and Steel	230.4	253.6	283.5	305.2	333.8	339.0	343.4	356.9	355.3
Steel Mill Products	229.9	254.5	280.4	302.7	337.6	349.5	352.8	366.0	366.1
Semi-finished Steel Products	243.6	270.5	294.3	325.6	359.3	370.2	370.6	371.4	371.2
Finished Steel Products	229.0	253.5	279.5	301.2	336.2	348.0	349.9	363.0	363.7
Foundry and Forge Shop Products	230.5	249.5	277.1	310.0	329.8	345.5	351.1	360.6	363.4
Gray Iron Castings	211.1	225.1	245.5	270.7	NA	NA	NA	NA	NA
Steel Castings	234.4	257.3	291.9	327.8	NA	NA	NA	NA	NA
Gray & Ductile Iron Cast Dec. 1980 = 100	NA	NA	NA	NA	105.2	110.5	110.5	111.6	114.2
Nonferrous Metals	195.4	207.8	261.7	305.0	285.8	263.6	276.1	277.1	262.5
Primary Metal Refinery Shapes	206.0	218.3	295.4	377.2	326.1	284.3	303.7	288.1	266.1
Mill Shapes	213.1	229.9	270.4	292.7	304.1	301.5	310.8	321.8	310.3
Aluminum Shapes	202.1	226.5	247.3	266.7	293.4	298.5	305.2	334.3	321.9
Wire and Cable	156.1	155.2	186.5	217.6	207.5	202.5	204.0	202.3	204.4
Metalworking Machinery and Equipment	198.5	217.0	241.3	274.4	301.3	320.9	326.5	334.0	341.9
Cutting Tools & Access.	172.0	187.5	206.8	233.2	256.3	271.1	274.7	279.3	286.5
Abrasive Products	193.4	205.6	223.4	252.5	276.5	296.8	304.5	306.7	314.4
Metal Cutting Machine Tools	206.3	231.5	266.9	313.5	344.8	368.5	376.3	385.7	395.3
Metal Forming Machine Tools	232.6	262.8	300.1	346.7	380.3	404.7	415.8	423.8	433.1
General Purpose Machy. & Equipment	201.8	216.6	236.4	264.6	288.7	304.0	308.2	314.1	321.3
Pumps, Compressors, & Equipment	211.6	228.0	249.1	287.7	324.5	347.3	347.4	349.5	356.4
Fluid Power Equipment, Dec. 1970 = 100	152.7	163.3	176.2	199.6	222.3	244.3	252.9	259.1	264.1
Fluid Power Pumps, Dec. 1970 = 100	152.0	161.7	174.9	198.6	223.9	245.1	257.2	255.0	259.6
Fluid Power Valves, Dec. 1971 = 100	142.6	150.3	162.1	180.5	200.1	222.4	226.0	234.7	239.3
Cylinders, Dec. 1971 = 100	151.1	164.3	177.7	205.5	230.1	255.9	273.0	NA	NA
Cylinders, June 1984 = 100	NA	NA	NA	NA	NA	NA	NA	100.2	101.1
Fluid Power Hose and Tube Fittings,Dec. 1972 = 100	151.3	166.5	178.0	204.3	223.5	238.4	239.5	245.4	252.5
Mechanical Power Transmission Equipment	196.6	213.0	234.6	264.0	294.8	312.4	315.8	326.1	338.0
Miscellaneous General Purpose Equipment	206.9	222.7	246.4	279.4	307.0	323.5	325.0	334.5	343.7
Ball & Roller Bearings	191.4	206.3	227.0	265.1	304.8	331.5	331.7	341.2	351.1
Electrical Machinery and Equipment	154.1	164.9	178.9	201.7	220.2	231.6	240.1	248.7	253.8
Motors, Generators, Motor Generator Sets	202.2	218.1	234.6	266.3	296.1	309.8	329.5	340.0	351.0
Electric Motors	192.5	207.3	229.0	252.3	278.8	293.9	NA	NA	NA
Integral Elec. Motors, AC June 1983 = 100	NA	NA	NA	NA	NA	NA	106.9	109.3	110.7
Transformers and Power Regulators	146.5	155.2	164.3	182.7	208.8	221.7	223.3	227.4	232.8
Switchgear, Switchboard, etc. Equipment	173.9	184.0	200.0	233.0	250.8	263.8	272.4	277.0	281.3
Electronic Components and Accessories	119.5	126.9	135.8	156.3	168.1	176.1	183.6	193.2	197.9

NA – Not Available. r – Revised.

Note: The individual commodities shown are selected components of each major commodity grouping. All indexes are annual averages. Source: U.S. Department of Labor, Bureau of Labor Statistics.

NATIONAL DEFENSE PURCHASES IMPLICIT PRICE DEFLATORS

By Major Type of Product, 1975 to Date

(Index 1982 = 100)

Year	Total Purchases	Durable Goods	Non-Durable Goods	Services (a)	Structures	Compensation
1975	56.5	59.3	41.6	−0.8	59.5	57.7
1976	59.7	61.7	43.4	−0.6	60.4	61.4
1977	63.5	64.6	46.3	−0.1	64.6	65.2
1978	68.6	70.1	50.3	−0.2	72.9	69.9
1979	71.1	75.5	61.9	−0.1	84.4	75.4
1980	84.7	84.9	87.9	0.3	95.4	82.8
1981(r)	93.8	94.4	102.0	0.2	99.4	92.0
1982(r)	100.0	100.0	100.0	0.0	100.0	100.0
1983(r)	103.8	104.9	92.9	0.1	101.2	105.0
1984(r)	107.6	108.9	89.8	0.1	105.5	109.8
1985(p)	111.7	111.0	89.6	−0.7	108.5	115.1

r – Revised. p – Preliminary.

(a) Services excluding Compensation.

Source: U.S. Department of Commerce, "Survey of Current Business" (monthly).

NATIONAL DEFENSE PURCHASES

By Major Type of Product, 1975 to Date

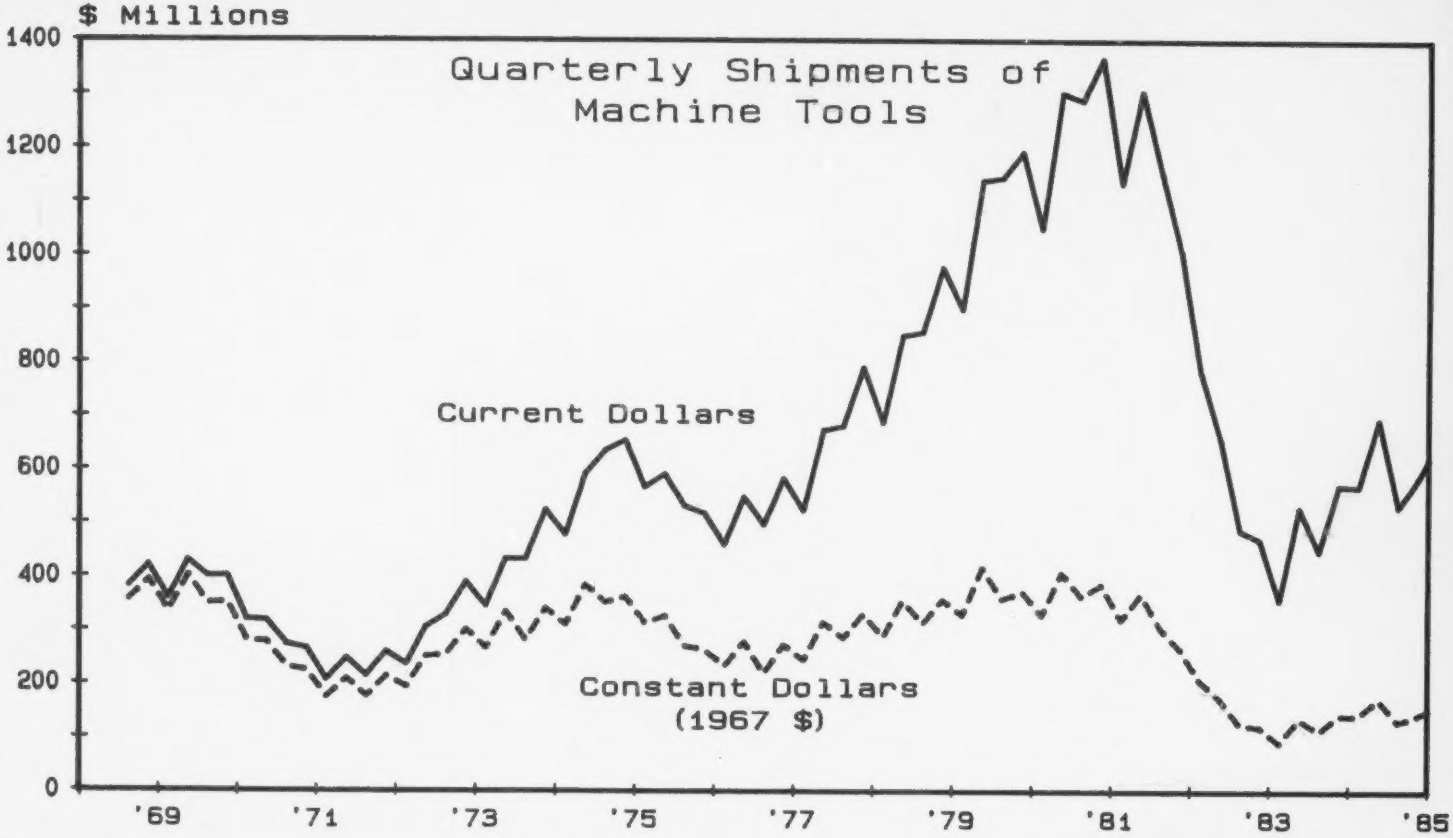
Year	Total Purchases	Durable Goods	Non-Durable Goods	Services (a)	Structures	Compensation
In Current Dollars (Billions)						
1975	$ 89.6	$17.4	$ 5.4	$17.4	$2.3	$47.1
1976	93.4	18.4	4.7	18.9	2.1	49.3
1977	100.9	21.9	5.1	19.7	2.4	51.8
1978	108.9	23.6	5.6	21.4	2.5	55.8
1979	121.9	28.7	6.7	24.3	2.5	59.7
1980	142.7	33.0	10.9	29.7	3.1	66.0
1981(r)	167.5	39.8	12.7	36.2	3.2	75.6
1982(r)	193.8	49.2	13.6	43.1	3.9	84.0
1983(r)	215.7	58.8	12.6	56.3	4.7	89.5
1984(r)	237.0	68.9	12.0	66.0	5.0	94.8
1985(p)	261.9	77.6	12.1	66.0	5.7	100.4
In Constant 1982 Dollars (Billions)						
1975	$161.1	$30.6	$13.2	$31.6	$3.8	$81.9
1976	157.5	30.6	11.3	32.0	3.4	80.2
1977	159.2	34.3	11.2	30.5	3.6	79.5
1978	160.7	35.0	11.4	31.0	3.4	79.9
1979	164.3	38.9	10.8	32.5	2.9	79.1
1980	171.2	40.3	12.4	35.6	3.3	79.7
1981(r)	180.3	43.3	12.5	39.2	3.2	82.1
1982(r)	193.8	49.2	13.6	43.1	3.9	84.0
1983(r)	207.3	56.4	13.5	47.5	4.6	85.2
1984(r)	220.3	64.6	13.3	51.4	4.7	86.3
1985(p)	235.7	71.6	13.3	58.3	5.3	87.2

r – Revised. p – Preliminary.

(a) Services excluding Compensation.

Source: U.S. Department of Commerce, "Survey of Current Business" (monthly).

The estimates in the above table are from a report prepared by the Bureau of Economic Analysis (BEA). Prior to 1980, the BEA included only Department of Defense purchases in the defense spending series. Beginning in 1980, their statistics include defense activities of other Federal agencies as well. These tables have been revised to reflect that change.


$ Millions
Quarterly Shipments of Machine Tools
Current Dollars
Constant Dollars (1967 $)
1400
1200
1000
800
600
400
200
0
'69
'71
'73
'75
'77
'79
'81
'83
'85

PRODUCER PRICES INDEXES FOR MACHINE TOOLS

1948 to Date

1967 = 100

Year	All Commodities	Durable Manufactures	Total(a) Machine Tools	Metal Cutting Machine Tools	Metal Forming Machine Tools
1948	82.8	65.3	39.9	38.8	43.1
1949	78.7	67.3	47.2	41.2	45.1
1950	81.8	69.6	45.5	44.2	49.0
1951	91.1	76.3	52.7	51.6	55.7
1952	88.6	76.7	56.1	55.3	58.5
1953	87.4	78.4	56.9	55.8	59.8
1954	87.6	79.4	57.2	56.1	60.4
1955	87.8	82.2	60.1	58.3	65.2
1956	90.7	87.5	68.1	66.3	73.7
1957	93.3	90.9	72.8	71.3	77.8
1958	94.6	92.1	74.0	72.7	76.9
1959	94.8	94.0	75.2	74.3	77.5
1960	94.9	94.1	77.4	76.5	79.6
1961	94.5	93.6	79.0	78.8	79.5
1962	94.8	93.5	80.8	80.5	81.4
1963	94.5	93.6	81.1	80.8	81.9
1964	94.7	94.6	84.1	83.9	84.4
1965	96.6	95.8	88.6	88.3	89.3
1966	99.8	97.9	94.4	94.1	95.6
1967	100.0	100.0	100.0	100.0	100.0
1968	102.5	103.5	103.3	103.0	104.1
1969	106.5	107.7	107.1	106.8	107.4
1970	110.4	112.0	114.1	113.5	115.6
1971	113.9	117.0	118.2	117.1	121.0
1972	119.1	121.1	121.7	120.2	125.3
1973	134.7	127.4	129.6	128.2	133.0
1974	160.1	148.6	153.9	152.0	161.7
1975	174.9	165.6	180.5	177.1	192.2
1976	182.9	175.5	196.5	190.9	212.9
1977(r)	194.2	188.1	213.3	206.3	232.6
1978	209.3	204.7	238.5	231.5	262.8
1979	235.6	226.1	273.2	266.9	300.1
1980	268.8	250.8	319.0	313.5	346.7
1981	293.4	269.7	353.4	344.8	380.3
1982	299.3	279.8	379.0	368.5	404.7
1983	303.1	287.3	389.0	376.3	415.8
1984(r)	310.3	293.9	398.8	385.7	423.7
1985	308.7	298.1	405.4	395.3	433.1

(a) Constructed by NMTBA from BLS producer price indexes for metal cutting and metal forming machine tools using NMTBA net new order weights.

Source: U. S. Dept. of Labor, Bureau of Labor Statistics: U.S. Dept. of Commerce, "Business Statistics, 1977," "Survey of Current Business" (monthly), and NMTBA.

Because of the continuous technological improvement in machine tools and the increasing number of "custom built" machines, reliable wholesale price indexes (which are intended to measure price changes not influenced by changes in quality, product mix, etc.) are difficult to develop. The data should be used with caution.

SHIPMENTS OF MACHINE TOOLS AT CONSTANT PRICES

1947 to Date

(In 1985 Dollars)

	Total Industry (a)		Metal Cutting		Metal Forming	
Year	Current Dollars (Thousands)	1985 Dollars (Thousands)	Current Dollars (Thousands)	1985 Dollars (Thousands)	Current Dollars (Thousands)	1985 Dollars (Thousands)
1947	$ 306,000	$3,474,903	$ 306,000	$3,526,564	—	—
1948	288,450	2,930,807	288,450	2,938,869	—	—
1949	249,150	2,139,912	249,150	2,390,616	—	—
1950	305,550	2,722,534	305,550	2,732,761	—	—
1951	632,250	4,863,462	632,250	4,843,714	—	—
1952	1,125,900	8,136,291	1,125,900	8,048,467	—	—
1953	1,191,200	8,486,748	1,191,200	8,438,651	—	—
1954	891,750	6,319,986	891,750	6,283,470	—	—
1955	670,400	4,522,091	670,400	4,545,701	—	—
1956	1,377,300	8,199,190	945,200	5,635,583	$ 432,100	$2,539,225
1957	1,242,700	6,920,036	900,150	4,990,575	342,550	1,906,869
1958	591,200	3,236,742	438,400	2,383,775	152,800	860,554
1959	616,000	3,320,755	440,600	2,344,116	175,400	980,217
1960	744,000	3,896,920	541,500	2,798,160	202,500	1,101,801
1961	750,900	3,853,338	541,250	2,715,210	209,650	1,142,133
1962	821,250	4,120,466	612,850	3,009,478	208,400	1,108,806
1963	895,750	4,477,631	638,450	3,123,532	257,300	1,360,656
1964	1,164,350	5,612,678	844,650	3,979,693	319,700	1,640,581
1965	1,425,600	6,522,992	1,022,550	4,577,831	403,050	1,954,750
1966	1,685,200	7,236,966	1,221,750	5,132,325	463,450	2,099,624
1967	1,805,950	7,321,320	1,353,200	5,349,251	452,750	1,960,890
1968	1,726,900	6,777,207	1,358,300	5,213,003	368,600	1,533,533
1969	1,597,550	6,047,203	1,192,450	4,413,702	405,100	1,633,599
1970	1,443,050	5,127,196	992,900	3,458,136	450,150	1,686,524
1971	997,900	3,422,623	672,300	2,269,520	325,600	1,165,438
1972	1,018,700	3,393,404	714,450	2,349,623	304,250	1,051,640
1973	1,501,000	4,695,320	1,073,750	3,310,875	427,250	1,391,286
1974	2,030,550	5,348,761	1,445,850	3,760,143	584,700	1,566,091
1975	2,451,700	5,506,468	1,878,650	4,193,322	573,050	1,291,293
1976	2,059,650	4,249,242	1,482,100	3,069,038	577,550	1,174,909
1977	2,280,750	4,334,790	1,650,800	3,163,179	629,950	1,172,960
1978	3,013,450	5,122,214	2,188,500	3,737,001	824,950	1,359,531
1979	3,876,550	5,752,411	2,930,050	4,339,658	946,500	1,365,978
1980	4,691,750	5,962,472	3,680,800	4,641,204	1,010,950	1,262,882
1981	5,095,600	5,845,388	4,104,500	4,705,646	991,100	1,128,700
1982	3,604,400	3,855,468	2,894,750	3,105,289	709,650	759,447
1983	1,845,050	1,922,828	1,371,500	1,440,742	473,550	493,250
1984	2,285,850	2,323,680	1,606,500	1,646,493	679,350	694,419
1985	2,545,200	2,545,200	1,742,250	1,742,250	802,950	802,950

(a) Shipment data not available for metal forming prior to 1956.

Note: 1985 dollar values developed from the Producer Price Index (formerly Wholesale Price Index) for metal cutting and metal forming machine tools.

Source: U. S. Department of Labor, Bureau of Labor Statistics, NMTBA "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog (monthly)."

When converted to constant dollars, the apparent record shipments in recent years disappear. For the years shown above, the historical constant dollar average for metal cutting is $3,855,056 and for metal forming is $1,030,527.

2

WORLD ECONOMY

The tables in this chapter are intended to provide a perspective of the U.S. position in the world economy. The picture has changed dramatically in the past twenty years. The changes in the world's economic structure brought about by OPEC and the growth of many developing nations into newly industrialized powers have led to major shifts in the balance of economic power in the world. The rise to wealth of these developing nations has been accompanied by a substantial increase in world trade. Increasing specialization by these and the major industrial nations has created an environment of interdependence in which each nation is but a piece of the larger world economic puzzle.

Trends in growth rates in selected industrialized countries are presented in tables on Gross National Product, Real Gross National Product, and Industrial Production. Factors underlying these growth trends are found in the tables on international investment patterns and various tables of comparative prices, wages, productivity, and unit labor costs. The data and charts on cost recovery allowable for tax purposes on machinery and equipment in selected industrial countries are especially interesting. These graphically demonstrate how our industrial competitors are able to invest more than the average American firm, and by inference, they also demonstrate why the U.S. rate of productivity growth in recent years has been considerably lower than that of our major competitors.

Growth in the world economy and world trade has brought about a growing interest in the balance of payments positions of the various countries. A nation's balance of payments is considered a key indicator of the health or weakness of an individual economy. The same can be said for an industry trading in the world marketplace. In recent years disparate inflation rates, exchange rate movements, the phasing of national business cycles, and energy related problems have caused dislocations in many nations' and industries' balance of payments positions.

Since 1975, the overall United States balance of trade has moved from a small surplus to record deficits. Until 1978, the U.S. machine tool industry remained in surplus in its world trade position though the relative size of the surplus had been declining throughout the 1970's. Record high machine tool imports by U.S. manufacturers, combined with relatively small increases in machine tool exports, led to substantial balance of trade deficits in machine tool trade from 1978 through the present. In a little over a decade, the share of the domestic market represented by imports has grown from a negligible amount to over fifty percent NC machine tool consumption and over forty percent of total U.S. machine tool consumption.

The tables in this chapter provide comparative international statistics on world trade, balance of trade, balance of payments and export prices.

GROSS DOMESTIC PRODUCT
1976 to Date
(Billions of U.S Dollars)

	1976	1977	1978	1979	1980	1981	1982	1983	1984(r)	1985
WORLD	$6,704	$7,554	$8,906	$10,241	$11,565	$12,636	$12,550	$12,653	$12,822	$13,301E
Of which:										
United States	1,698	1,895	2,134	2,375	2,586	2,908	3,021	3,257	3,727	3,948
Canada	198	202	209	232	261	293	301	327	337	344
Japan	559	687	963	998	1,040	1,145	1,063	1,158	1,255	1,331
Australia	96	96	110	122	141	162	160	156	228	318
Belgium	68	79	97	111	119	98	86	82	78	80
France	351	384	474	574	655	573	543	517	490	509
West Germany	445	515	640	760	815	683	659	653	614	622
Italy	188	215	262	325	396	353	349	353	348	359
Netherlands	91	112	137	158	169	141	138	132	123	124
Spain	108	121	146	196	212	188	181	159	161	166
Sweden	78	83	91	108	124	113	99	91	95	100
Switzerland	57	61	85	95	102	94	97	97	91	92
United Kingdom	228	254	322	416	535	511	484	457	425	452
Saudia Arabia	47	58	66	71	116	154	153	120	105	94
Brazil	152	176	208	234	250	275	283	210	209	240
Mexico	89	82	103	135	186	240	167	145	163	170
U.S.S.R.	975	1,066	1,152	1,253	1,393	1,587	1,715	1,843	1,958	1,999E
China	125	142	179	215	246	231	225	247	274	268
PER CAPITAL WORLD	$1,606	$1,777	$2,056	$2,327	$2,583	$2,772	$2,704	$2,680	$2,699	$2,7512E
Of which:										
United States	7,785	8,603	9,588	10,554	11,359	12,650	13,019	13,887	15,746	16,540
Canada	8,596	6,682	8,896	9,788	10,910	12,044	12,217	13,124	13,356	13,438
Japan	4,959	6,034	8,381	8,610	8,909	9,734	8,973	9,706	10,458	11,000
Australia	6,855	6,770	7,667	8,380	9,597	10,827	10,541	10,135	11,381	9,918
Belgium	6,926	8,049	9,840	11,275	12,119	9,945	8,763	8,311	7,879	8,081
France	6,638	7,226	8,905	10,734	12,201	10,610	10,016	9,455	8,945	9,255
West Germany	7,229	8,389	10,435	12,365	13,239	11,079	10,699	10,640	10,033	10,197
Italy	3,351	3,815	4,618	5,714	6,930	6,176	6,193	6,208	6,121	6,281
Netherlands	6,597	8,088	9,848	11,227	11,979	9,924	9,624	9,192	8,501	8,552
Spain	3,006	3,324	3,983	5,261	5,658	4,984	4,771	4,154	4,190	4,296
Sweden	9,501	10,007	11,024	13,008	14,940	13,564	11,898	10,888	11,378	11,905
Switzerland	8,943	9,583	13,380	14,992	15,908	14,628	14,897	14,988	13,954	13,731
United Kingdom	4,077	4,555	5,768	7,443	9,562	9,150	8,685	8,100	7,542	8,000
Saudia Arabia	6,149	7,345	8,027	8,276	12,943	16,513	15,815	11,513	12,353	11,059
Brazil	1,416	1,595	1,844	2,024	2,059	2,219	2,232	1,618	1,576	1,770
Mexico	1,426	1,268	1,569	1,995	2,687	3,366	2,287	1,932	2,122	2,166
U.S.S.R.	3,797	4,116	4,409	4,757	5,247	5,928	6,352	6,764	7,120	7,217
China	132	149	184	219	247	229	221	241	267	256

E - Estimate. r - Revised.

(a) Prior to 1981, the world total does not include Bulgaria, Czechoslovakia, East Germany, Poland, Romania, and North Korea. These countries are included after 1980 but the data represents GNP rather than GDP.

(b) Data for the U.S.S.R. series are GNP figures.

Note: GDP measures the total value of final output of a country's economy - that is, of the goods produced and services rendered within its territory by residents and nonresidents for a given period - without regard to its allocation among domestic and foreign claims.

Source: International Monetary Fund, "International Financial Statistics" Department of Commerce, International Trade Administration, Central Intelligence Agency, "Handbook of Economic Statistics," Department of State, and World Bank, "World Population Projections."

INTERNATIONAL INVESTMENT PATTERNS
1975 to Date

	Gross Fixed Capital Formation as Percent of GDP									
	1975	1977	1978	1979	1980	1981	1982	1983	1984	1985
United States (a)	13.9%	15.9%	16.9%	17.9%	16.6%	16.4%	15.1%	15.2%	16.5%	16.8%
Canada	23.7	22.9	22.2	22.4	22.6	23.3	21.4	19.3	18.[illegible]	16.5
Japan	32.8	31.1	31.3	31.7	31.6	30.7	29.7	28.3	27.8	27.6
Australia	22.7	23.6	23.5	24.4	25.1	26.9	26.1	23.5	22.6	23.5
France	23.0	23.4	22.0	21.5	21.9	21.4	20.8	19.8	19.0	19.0
West Germany	19.8	21.1	21.4	21.8	22.7	21.8	20.5	20.6	20.3	19.6
Italy	20.3	21.4	20.0	18.8	19.8	20.2	19.0	18.0	17.9	18.9
Netherlands	20.6	21.6	21.9	21.0	21.0	19.2	18.2	18.1	18.4	18.4
Spain	26.5	22.6	20.3	18.9	19.4	20.3	19.7	18.9	17.9	20.5
Sweden	24.2	20.5	17.6	19.8	20.2	19.2	18.8	18.7	18.4	19.0
Switzerland	23.0	20.7	21.7	21.8	23.8	24.1	23.1	23.3	23.3	23.7
United Kingdom	18.6	19.8	19.6	19.9	16.8	16.4	16.4	16.4	19.4	19.1

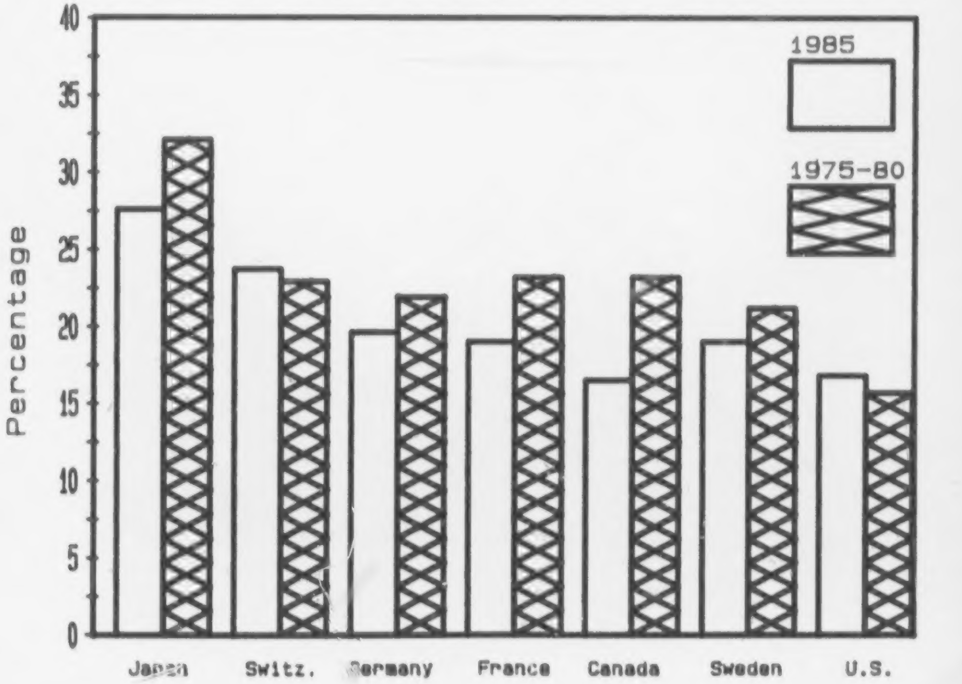
(a) This data consists of Private Gross Fixed Capital Formation, i.e. it excludes government capital formation which is included in the other nations' data.

Note: Fixed Capital Formation consists of non-residential structures and producers durable equipment as well as residential structures.

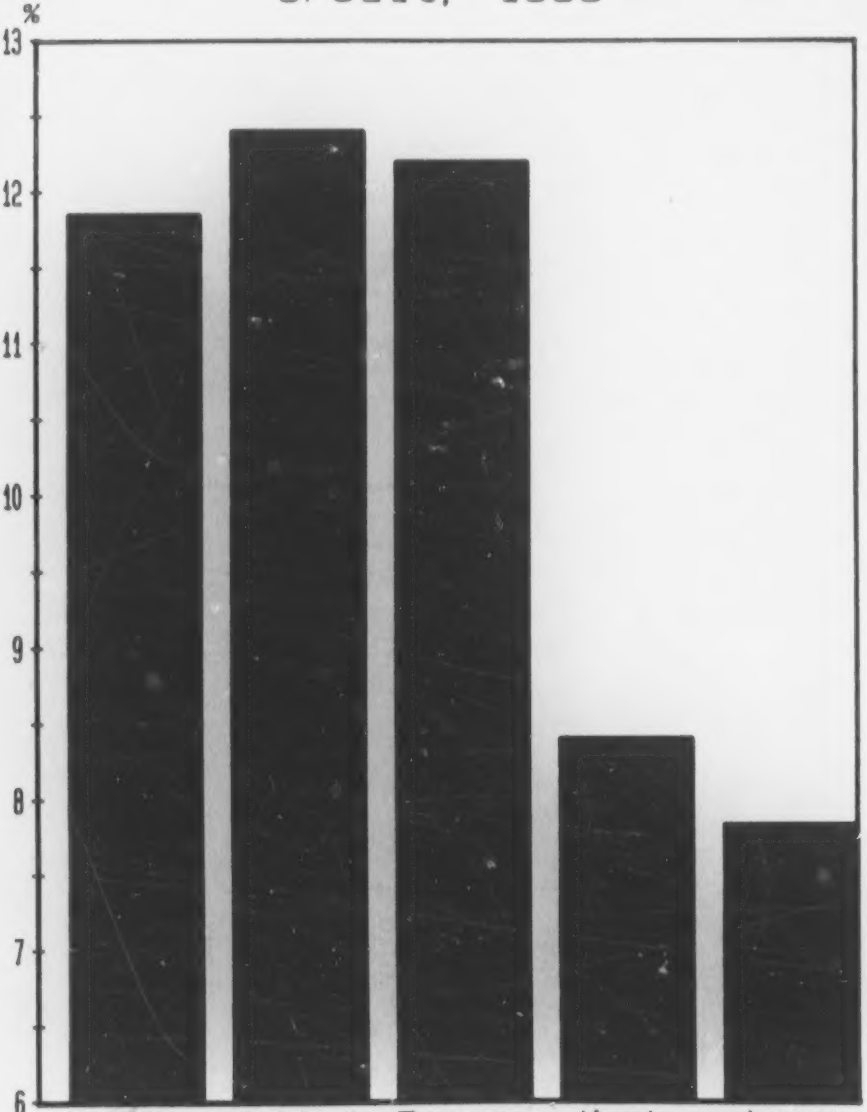
Source: International Monetary Fund, "International Financial Statistics" (Supplement Series No. 8); U.S. Department of Commerce.

INTERNATIONAL INVESTMENT PATTERNS

Fixed Capital Formation as a Percent of GDP



Long Term Interest Rates on Government Supported Export Credit, 1985



U.S. DIRECT INVESTMENT (a) ABROAD BY MAJOR INDUSTRY AND COUNTRY—YEAR END 1984

(Billions of U.S. Dollars)

	Total	Manufacturing	Mining and Smelting	Petroleum	Other
Developed Countries	$174.1	$72.9	$4.2	$40.6	$56.4
Canada	50.5	21.5	2.1	11.6	15.4
Europe	103.7	43.7	Z	24.7	35.2
European Community	78.9	39.9	Z	20.2	18.7
United Kingdom	32.1	12.7	D	10.9	D
France	6.5	4.2	Z	0.5	D
West Germany	15.2	9.4	Z	3.2	2.7
Other EEC	25.0	13.7	D	D	D
Other Europe	24.8	3.7	Z	4.6	16.5
Japan	8.4	4.1	0.0	2.1	D
Australia, New Zealand, South Africa	11.6	3.6	2.1	2.2	D
Developing Countries	53.9	20.1	2.9	18.4	12.5
Latin America	28.1	15.7	2.2	5.9	4.3
Middle East (b)	3.4	0.3	D	1.2	D
Other Africa (c)	6.2	0.5	0.4	4.5	0.8
Other Asia and Pacific	16.2	3.7	D	6.8	D
Other Countries	5.4	—	—	4.3	1.1
Total	$233.4	$93.0	$7.1	$63.3	$70.0

D - Withheld to avoid disclosure. Z - Less than $50 million.

(a) Book value.
(b) Includes Bahrain, Iran, Israel, Jordan, Kuwait, Lebanon, Qatar, Saudi Arabia, South Yemen, Syria, United Arab Emirates, Oman and Yemen.
(c) Includes United Arab Republic (Egypt).

Note: Individual items may not add to totals due to rounding.

Source: U.S. Department of Commerce, "Survey of Current Business," August 1985.

INDUSTRIAL PRODUCTION (a,r)

1965 to Date

(1980 = 100)

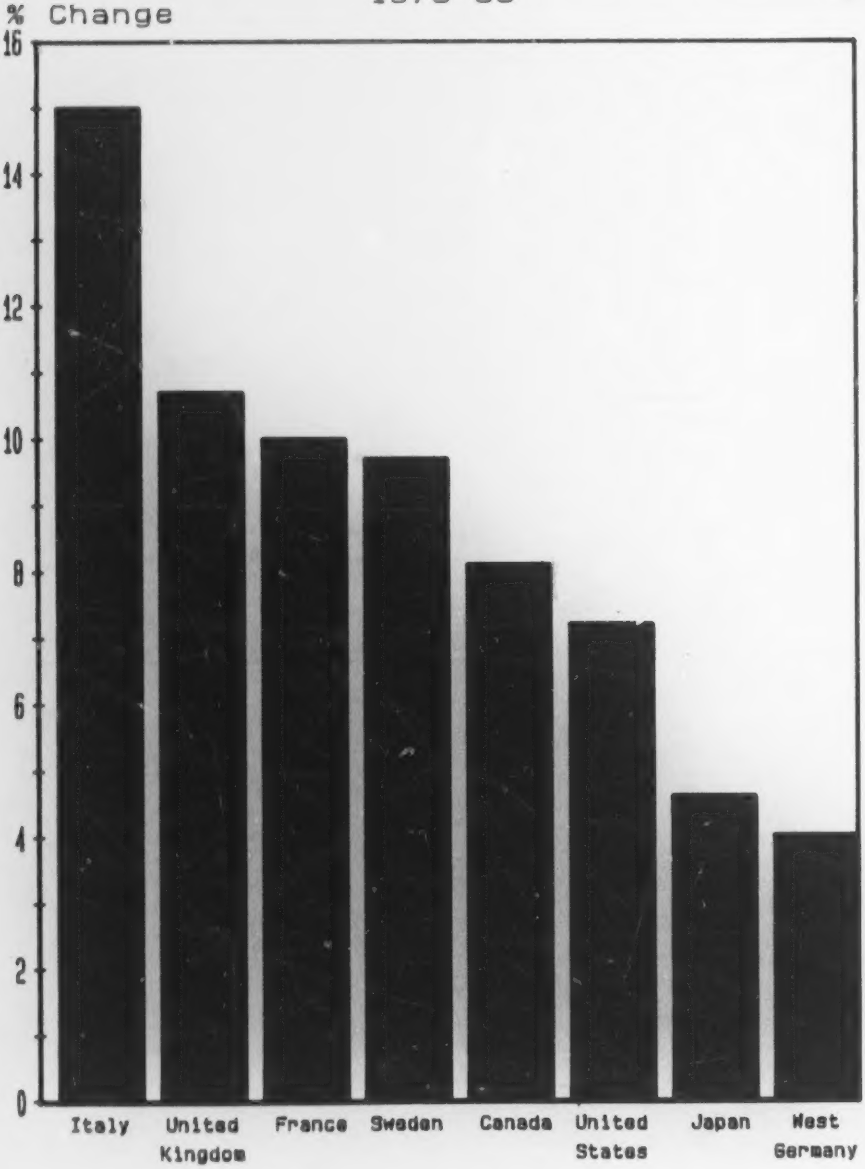
Year	United States	Canada	Japan	EEC(b)	United Kingdom	France	West Germany	Italy
1965	61.1	55.9	32.0	60.8	83.3	58.0	65.0	49.8
1966	66.5	59.4	36.2	63.2	84.6	61.0	65.0	55.5
1967	68.0	61.5	43.3	64.2	85.5	62.0	63.0	60.0
1968	72.3	65.9	50.7	68.9	91.0	65.0	69.0	63.9
1969	75.6	70.1	58.8	75.5	93.4	71.0	79.0	66.4
1970	73.3	71.3	66.9	79.1	93.5	75.0	83.0	72.1
1971	74.6	73.8	68.6	80.9	93.6	80.0	85.0	72.0
1972	81.4	79.4	73.6	84.5	95.7	84.0	88.0	75.2
1973	88.3	87.8	84.6	90.8	102.7	90.0	92.0	82.5
1974	88.0	90.6	81.2	91.3	98.7	92.0	90.0	86.2
1975	80.1	85.2	72.3	85.2	93.9	86.0	84.0	78.3
1976	88.7	90.2	80.4	91.5	5.9	93.0	91.0	87.9
1977	93.9	92.5	83.7	93.6	100.1	95.0	93.0	88.9
1978	99.4	95.0	89.0	96.1	103.3	97.0	95.0	88.8
1979	101.9	100.7	95.5	100.6	107.2	99.0	100.0	94.7
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	102.2	101.0	101.0	97.6	6.6	99.0	98.0	98.5
1982	94.9	90.2	101.3	96.1	8.4	97.0	95.0	95.4
1983	100.5	95.3	104.9	97.0	101.9	98.0	95.0	92.3
1984	112.1	103.7	116.5	99.7	103.1	99.0	98.0	95.2
1985	114.6	107.9	121.9	102.6E	108.1	99.0	103.0	96.5

E - Estimate. r - Revised.

(a) Excludes construction.
(b) Data for the European Economic Community (EEC) on this table contains statistics for Belgium, Denmark, France, Ireland, Italy, Luxembourg, Netherlands, United Kingdom, and West Germany, and also includes Greece after 1980.

Source: International Monetary Fund, "International Financial Statistics," and NMTBA.

Consumer Prices
Average Annual Percent Change
1975-85



CONSUMER PRICES
(1980 = 100)

Year	United States	Canada	Japan	United Kingdom	France	West Germany	Italy	Sweden
1965	38.2	38.2	32.4	22.1	32.2	54.0	23.6	33.3
1966	39.4	39.6	34.0	23.0	33.0	55.9	24.2	35.4
1967	40.5	41.1	35.4	23.6	33.9	56.8	25.1	37.0
1968	42.2	42.7	37.3	24.7	35.5	57.8	25.5	37.7
1969	44.5	44.7	39.3	26.1	37.6	58.9	26.1	38.7
1970	47.1	46.1	42.3	27.7	39.9	60.9	27.4	41.4
1971	49.1	47.5	44.9	30.3	42.1	64.0	28.8	44.5
1972	50.8	49.7	46.9	32.5	44.7	67.6	30.4	47.2
1973	53.9	53.5	52.4	35.5	47.9	72.3	33.7	50.3
1974	59.8	59.3	65.2	41.1	54.5	77.4	40.1	55.3
1975	65.3	65.7	72.9	51.1	60.9	82.0	46.9	60.7
1976	69.1	70.7	79.7	59.6	66.8	85.5	54.8	67.0
1977	73.6	76.3	86.1	69.0	73.0	88.7	64.1	74.6
1978	79.2	83.2	89.4	74.7	79.4	91.1	71.9	82.0
1979	88.1	90.7	92.6	84.8	87.9	94.9	82.5	87.9
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	110.4	112.4	104.9	111.9	113.4	106.3	117.8	112.1
1982	117.1	124.6	107.7	121.5	126.8	111.9	137.2	121.7
1983	120.9	131.8	109.6	127.1	139.0	115.6	157.3	132.6
1984	126.1	137.5	112.1	133.4	149.3	118.4	174.3	143.2
1985	130.5	143.0	114.4	141.5	157.9	121.0	190.3	153.8

Source: International Monetary Fund, "International Financial Statistics."

WHOLESALE PRICES
(1980 = 100)

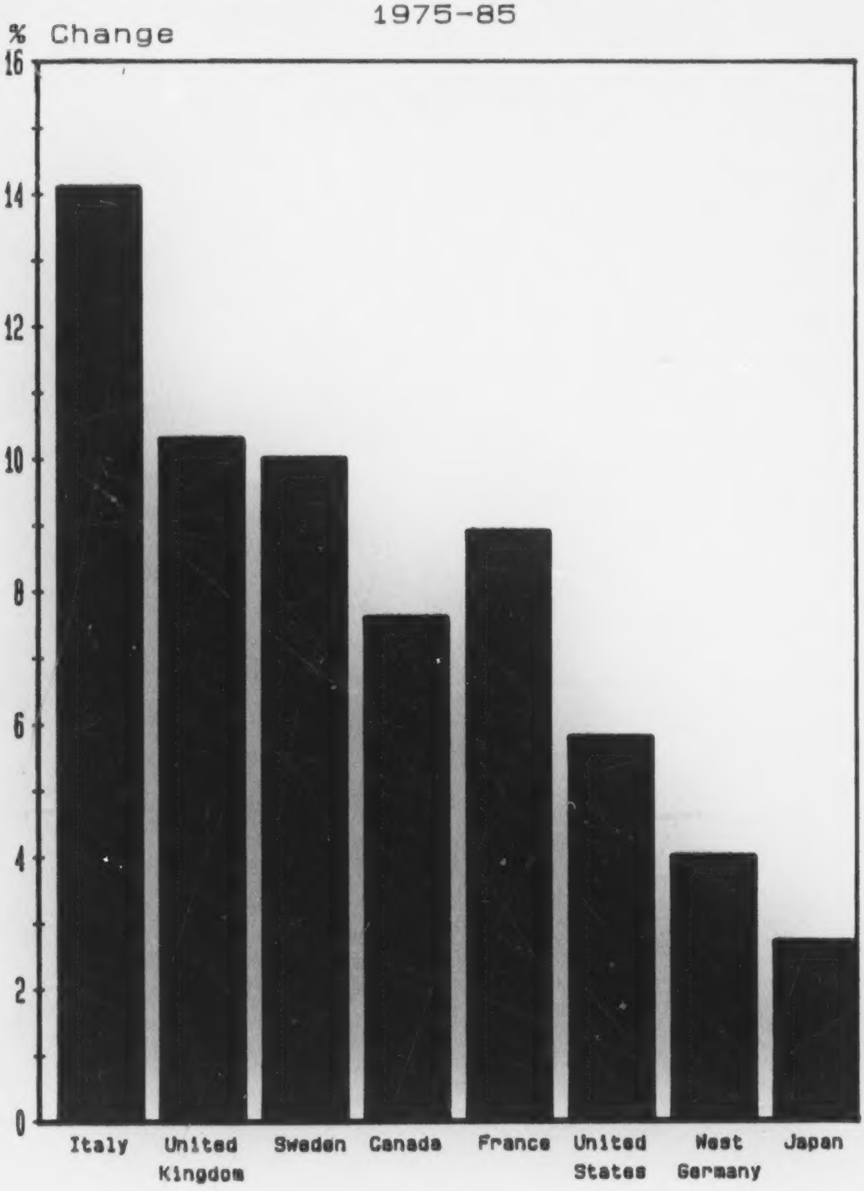
Year	United States	Canada(a)	Japan	United Kingdom(b)	France(c)	West Germany(d)	Italy	Sweden(e)
1965	36.0	34.9	43.5	22.1	38.5	56.8	21.1	NA
1966	37.2	35.9	44.5	22.7	39.6	57.8	21.4	NA
1967	37.2	36.6	45.3	24.4	39.3	57.3	21.4	NA
1968	38.2	37.3	45.7	25.2	38.6	56.9	21.5	35.0
1969	39.7	38.7	46.7	26.2	42.8	57.9	22.3	36.0
1970	41.1	39.7	48.4	28.2	46.0	60.8	24.0	38.0
1971	42.4	40.4	48.0	30.6	46.9	63.4	24.8	39.0
1972	44.3	42.2	48.4	32.2	49.1	65.1	25.8	41.0
1973	50.1	47.0	56.0	34.6	56.3	69.4	30.2	46.0
1974	59.6	55.9	73.7	42.7	72.7	78.7	42.5	57.0
1975	65.1	62.2	75.9	52.1	68.6	82.3	46.1	61.0
1976	68.1	65.4	79.7	61.1	73.6	85.4	57.1	66.0
1977	72.3	70.5	81.2	72.0	77.7	87.7	66.5	73.0
1978	77.9	77.0	79.1	79.1	81.1	88.7	72.1	78.0
1979	87.6	88.1	84.9	87.7	91.9	93.0	83.3	88.0
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	109.1	110.2	101.4	109.6	111.0	107.8	116.6	111.0
1982	111.3	116.8	103.2	118.0	123.3	114.1	132.8	125.0
1983	112.7	120.9	100.9	124.4	136.9	115.8	145.7	139.0
1984	115.4	125.8	100.7	132.1	155.1	119.2	160.8	150.0
1985	114.9	129.1	99.5	139.4	161.3	121.9	172.6	158.0

NA - Not Available.

(a) Industrial selling prices.
(b) Manufacturing output prices.
(c) Industrial goods prices.
(d) Industrial products prices.
(e) Domestic supply prices.

Source: International Monetary Fund, "International Financial Statistics."

Wholesale Prices
Average Annual Percent Change
1975-85



UNIT VALUE OF EXPORTS
(1980 = 100)

Year	United States	Canada	Japan	United Kingdom	France	West Germany	Italy	Sweden
1969	36.2	33.0	56.9	24.6	37.8	63.4	21.4	34.0
1970	38.2	34.1	59.5	26.4	41.7	61.2	22.4	37.0
1971	39.4	34.4	60.7	27.9	44.1	63.5	23.6	39.0
1972	40.7	35.5	59.9	29.5	44.6	65.4	24.3	41.0
1973	47.4	40.5	63.6	33.2	49.0	68.4	28.8	45.0
1974	60.5	53.7	85.4	42.4	61.8	79.4	40.8	57.0
1975	67.6	59.5	87.4	51.9	65.2	86.2	45.3	66.0
1976	69.9	60.9	86.9	62.1	71.2	89.7	55.3	70.0
1977	72.4	64.8	87.1	72.1	78.2	85.9	65.9	74.0
1978	77.4	71.0	82.2	79.0	82.2	86.7	70.7	78.0
1979	88.1	86.0	89.8	87.5	90.2	91.3	82.8	88.0
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1981	109.2	106.3	103.0	108.8	113.0	106.3	122.3	109.0
1982(r)	110.4	106.9	108.4	116.6	129.0	110.9	141.7	123.0
1983(r)	111.6	105.8	101.1	125.7	142.5	112.4	149.8	137.0
1984(r)	113.1	107.2	100.7	136.0	158.7	116.3	164.1	147.0
1985	112.2	109.8	100.7	143.4	166.3	120.8	NA	152.0

r - Revised. NA - Not Available.

Source: International Monetary Fund, "International Financial Statistics."

SOVIET UNION FOREIGN TRADE (a)
1967 to Date
(Millions of U.S. Dollars)

	Exports			Imports		
Year	Total	Communist Countries (b)	Non-communist Countries	Total	Communist Countries (b)	Non-communist Countries
1967	$ 9,652	$ 6,377	$ 3,275	$ 8,537	$ 5,946	$ 2,591
1968	10,634	7,134	3,500	9,410	6,367	3,043
1969	11,655	7,682	3,973	10,327	6,696	3,631
1970	12,800	8,367	4,433	11,732	7,636	4,095
1971	15,918	10,398	4,788	14,388	9,432	4,302
1972	16,312	10,608	6,768	17,049	10,913	6,216
1973	21,175	12,215	8,978	20,825	12,351	8,442
1974	27,374	14,641	12,733	24,861	13,601	11,260
1975	33,407	20,271	13,136	37,072	19,415	17,657
1976	37,550	22,040	15,510	38,542	20,246	18,296
1977	45,094	25,901	19,193	40,806	23,284	17,521
1978	52,432	31,244	21,188	50,798	30,494	20,305
1979	64,913	36,152	28,761	57,961	32,801	25,160
1980	76,470	41,463	35,007	68,477	36,424	32,052
1981	78,809	43,044	35,764	72,631	66,905	35,727
1982	86,940	46,985	39,955	77,644	42,415	35,229
1983	91,653	50,914	40,739	80,440	45,484	34,957
1984	91,492	51,790	39,702	80,352	47,010	33,342
1985	86,400	52,800	33,600	82,400	50,300	32,100

(a) Exports and imports are F.O.B.

(b) Up to 1980, the following are included in the Communist Countries category: Albania, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania, China, and Mongolian People's Republic. After 1980 the following are included in the category: Bulgaria, China, Cuba, Czechoslovakia, German Democratic Republic, Hungary, Korea, Laos, Mongolian People's Republic, Vietnam, and Yugoslavia.

Source: U.S. Department of Commerce "Overseas Business Reports," and U.S. Department of State.

WORLD TRADE (a)

(Billions of U.S. Dollars)

	1982(r)		1983(r)		1984(r)		1985(p)	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
United States(b)	$ 212	$ 255	$ 201	$ 270	$ 218	$ 341	$ 214	$ 358
Canada	71	58	77	65	90	79	93	82
Japan	138	132	147	126	170	136	177	137
European Community	590	615	574	591	585	599	617	629
United Kingdom	97	100	92	100	94	105	101	109
France	97	116	95	105	98	104	100	107
West Germany	176	155	169	153	172	153	184	160
Italy	74	86	73	80	73	84	77	93
Other developed	183	220	182	205	194	212	212	236
Less developed	461	467	433	430	458	424	428	410
OPEC	215	171	176	146	170	133	142	117
Other	247	296	257	284	288	291	287	293
Communist	224	203	235	213	244	224	256	259
Total(c)	$1,881	$1,945	$1,849	$1,889	$1,959	$2,015	$1,997	$2,111

p - Preliminary. r - Revised.

(a) Import values are cost, insurance, and freight (c.i.f.) except for Communist countries', which are free on board (f.o.b.).

(b) Exports include Department of Defense shipments.

(c) Individual items may not add to totals due to rounding.

Source: "Economic Report of the President," February 1986.

These figures show exports and imports of merchandise only.

U.S. TRADE WITH COMMUNIST COUNTRIES (a,c)

(Millions of U.S. Dollars)

	U.S. Exports			U.S. Imports		
	To Eastern Europe	To USSR	To People's Republic of China	From Eastern Europe (b)	From USSR	From People's Republic of China
1965	$ 94.8	$ 45.2	z	$ 94.8	$ 42.6	$ 0.5
1966	156.0	41.7	z	129.1	49.6	0.1
1967	135.0	60.3	z	136.1	41.2	0.2
1968	157.3	57.7	z	140.0	58.5	z
1969	143.7	105.5	z	144.0	51.5	z
1970	234.9	118.7	z	153.5	72.3	z
1971	222.2	162.0	z	165.8	57.2	4.9
1972	276.9	542.2	$ 63.5	225.0	95.5	32.4
1973	606.5	1,194.7	689.6	306.1	220.1	64.9
1974	823.4	609.2	807.4	539.4	350.4	114.7
1975	951.0	1,836.9	303.8	472.9	255.3	157.4
1976	1,189.7	2,305.9	135.4	646.2	220.6	201.9
1977	911.9	1,623.5	171.3	683.7	234.3	202.7
1978	1,420.2	2,249.0	818.2	969.8	540.4	324.0
1979	2,066.2	3,603.6	1,716.5	998.8	873.2	592.3
1980	2,339.8	1,509.7	3,749.0	982.0	452.9	1,058.3
1981	1,904.2	2,338.6	3,598.6	1,206.7	347.4	1,895.3
1982	1,012.8	2,583.7	2,912.1	839.4	227.6	2,283.7
1983	887.8	2,002.9	2,173.1	1,011.5	347.1	2,244.1
1984(r)	903.9	3,283.9	3,004.3	1,599.4	600.1	3,064.8
1985	792.0	2,423.0	3,855.7	1,671.0	441.0	4,224.2

z - Less than $50,000. r - Revised.

(a) Exports and imports are f.a.s. transaction values, except prior to 1974, where imports are customs values.

(b) Does not include Yugoslavia.

(c) Data for 1978 to the present are not directly comparable to prior years due to commodity schedule changes.

Source: U.S. Department of Commerce; "Overseas Business Reports."

BALANCE OF TRADE AND PAYMENTS
1983 to Date,
(Billions of U.S. Dollars)

	Balance of Trade (a)	Balance on Current Account (b)
United States (c)		
1983(r)	-69.4	-40.8
1984(r)	-123.3	-101.5
1985E	-143.8	-109.9
Canada		
1983(r)	11.4	1.4
1984(r)	11.8	2.0
1985E	10.8	0
Japan		
1983(r)	20.6	20.8
1984(r)	33.5	35.0
1985E	39.6	47.5
United Kingdom		
1983(r)	-8.5	4.8
1984(r)	-11.1	1.2
1985E	-8.5	4.2
France		
1983(r)	-10.5	-4.4
1984(r)	-6.1	-.8
1985E	-6.6	.7
West Germany		
1983(r)	16.5	4.1
1984(r)	18.7	6.3
1985E	23.8	12.7
Italy		
1983(r)	-7.7	.8
1984(r)	-10.9	-3.0
1985E	-15.8	-7.2

r - Revised. E - Estimate.

(a) Balance of payments basis (exports f.o.b. less imports c.i.f.).
(b) Net exports of goods end services and unilateral transfers (OECD basis).

(c) Refer to Chapter 1 for historical chart of the United States balance of trade.

Source: "Economic Report of the President," February 1986.

AVERAGE HOURLY COMPENSATION OF PRODUCTION WORKERS IN MANUFACTURING
For Selected Years
(U.S. Dollars)

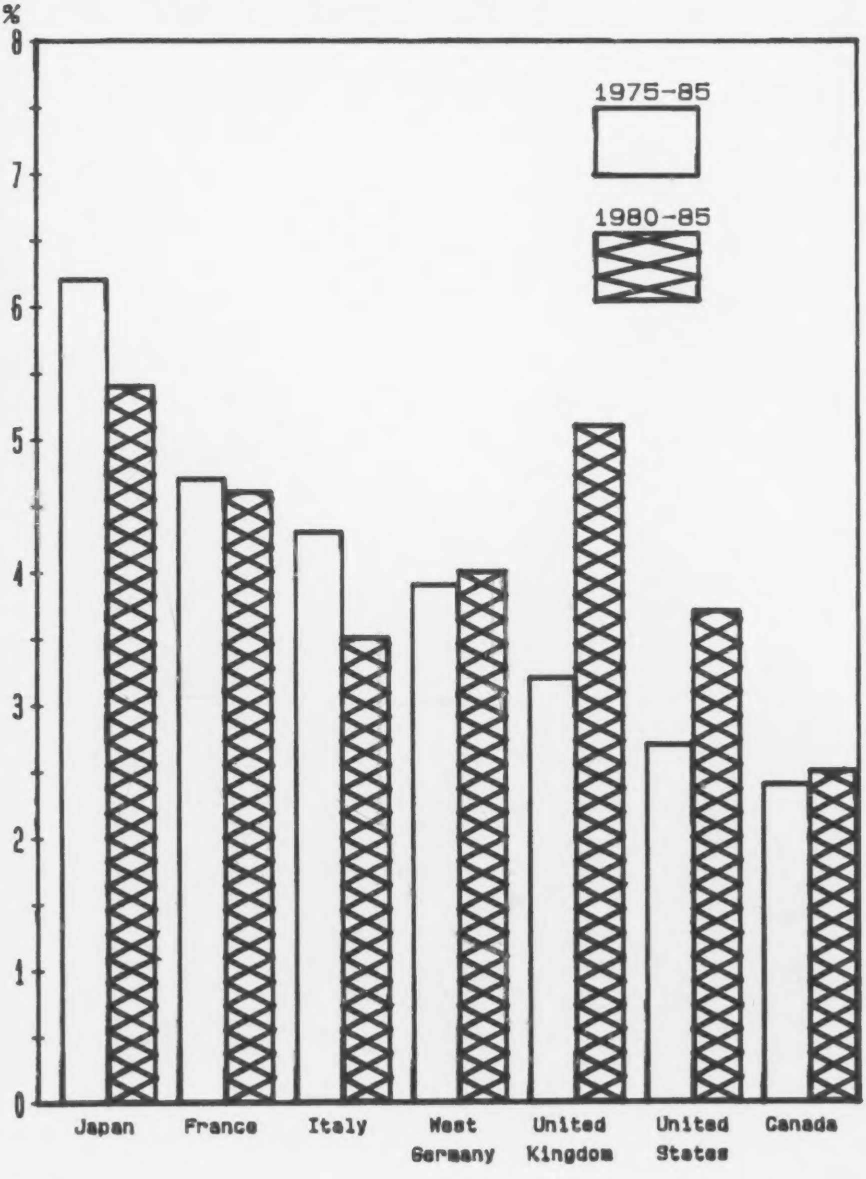
	1970	1980(r)	1982(r)	1983(r)	1984(r)	1985E	Percent Increase 1980–1985
United States	$4.20	$ 9.80	$11.51	$11.99	$12.47	$12.97	32%
Canada	3.46	8.44	10.19	10.93	11.07	10.89	29
United Kingdom	1.46	7.38	6.76	6.44	6.03	6.27	-15
France	1.74	9.12	8.01	7.92	7.48	7.74	-15
West Germany	2.32	12.33	10.36	10.39	9.60	9.82	-20
Italy	1.75	8.00	7.40	7.78	7.53	7.73	-3
Sweden	2.96	12.51	10.07	8.89	9.17	9.62	-23
Japan	.99	5.61	5.70	6.12	6.35	6.45	15

r - Revised. E - Estimate.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

For international comparisons of compensation in the machine tool industry, see Chapter 7.

Productivity
Average Annual Increase in Output per Man-Hour in Manufacturing



PRODUCTIVITY IN MANUFACTURING (r)

Selected Countries, 1967 to Date
Indexes: 1977 = 100

	United States	Canada	Japan	France	West Germany	Italy	United Kingdom
Unit Labor Cost (a)							
1967	60.5	34.5	34.5	48.0	33.6	42.5	51.9
1968	62.8	55.5	35.9	48.9	33.4	42.0	45.2
1969	66.4	56.4	37.0	47.0	34.9	44.3	48.1
1970	70.9	61.7	39.1	46.8	42.9	50.6	54.4
1971	71.3	64.1	44.0	50.3	48.5	57.5	61.3
1972	72.1	67.0	52.9	57.1	55.1	64.5	65.8
1973	73.7	68.8	65.6	70.4	70.4	73.1	67.7
1974	84.1	79.7	76.8	74.5	79.1	77.6	80.1
1975	91.7	89.8	86.7	99.5	88.7	104.3	100.8
1976	94.9	100.7	86.9	96.3	87.3	90.5	92.3
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	106.6	98.1	126.8	117.3	121.0	115.6	126.3
1979	117.0	103.0	121.3	135.5	135.9	129.5	163.9
1980	130.6	116.4	116.8	153.4	147.9	141.4	218.3
1981	140.1	129.1	123.8	132.2	124.9	126.3	203.1
1982	148.7	142.3	108.8	121.5	119.7	125.4	183.5
1983	144.5	143.7	111.5	112.9	113.4	126.8	159.4
1984	142.8	133.9	107.2	102.7	101.6	112.8	143.9
1985	145.0	129.4	104.2	102.6	98.6	111.1	147.3
Hourly Compensation (a)							
1967	46.8	36.9	15.3	27.0	20.2	25.4	35.9
1968	50.2	39.7	17.8	30.4	21.7	27.1	33.5
1969	53.9	42.7	21.3	30.9	24.1	30.7	36.5
1970	57.3	47.4	25.3	32.6	30.5	36.8	42.2
1971	60.8	52.7	30.2	36.9	35.9	43.1	49.8
1972	64.2	57.6	39.8	44.3	43.4	52.3	57.4
1973	68.8	62.8	54.5	57.9	59.1	66.4	62.9
1974	76.2	74.4	66.4	63.4	69.1	73.9	76.3
1975	85.1	81.7	76.0	88.1	79.9	95.0	95.1
1976	92.1	96.9	81.9	91.5	84.2	89.5	91.5
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	108.2	99.5	137.0	123.9	124.8	119.1	128.3
1979	118.6	107.3	139.2	149.4	147.0	143.1	167.5
1980	132.4	118.7	143.2	171.8	160.7	165.3	220.9
1981	145.2	134.3	157.6	153.9	138.6	152.8	219.1
1982	157.5	143.8	146.9	150.0	134.8	154.8	206.8
1983	163.2	154.6	158.6	145.9	134.9	160.6	193.3
1984	169.1	149.3	163.3	138.7	126.7	152.3	181.7
1985	176.6	148.9	166.5	143.8	130.0	154.5	191.1
Output Per Man Hour (Productivity)							
1967	77.4	66.9	44.2	56.3	60.1	59.7	69.1
1968	79.8	71.5	49.8	62.3	64.9	64.5	74.1
1969	80.8	75.7	57.5	65.8	69.1	69.4	75.9
1970	80.8	76.8	64.8	69.6	71.2	72.7	77.6
1971	85.3	82.3	68.6	73.4	74.0	74.9	81.4
1972	89.0	85.9	75.3	77.7	78.9	81.1	87.2
1973	93.4	91.3	83.1	82.2	84.0	90.9	92.9
1974	90.6	93.4	86.5	85.2	87.4	95.3	95.2
1975	92.9	91.0	87.7	88.5	90.1	91.1	94.3
1976	97.1	96.2	94.3	95.0	96.5	98.9	99.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	101.5	101.4	108.0	105.7	103.1	103.0	101.5
1979	101.4	104.2	114.8	110.3	108.2	110.5	102.2
1980	101.4	[illegible]	122.7	112.0	108.6	116.9	101.2
1981	103.6	[illegible]	127.2	116.4	111.0	121.0	107.9
1982	105.9	101.0	135.0	123.5	112.6	123.4	112.7
1983	112.9	107.6	142.3	129.3	119.0	126.6	121.2
1984	118.5	111.5	152.2	135.0	124.7	135.0	126.2
1985	121.8	115.1	159.9	140.2	131.9	139.1	129.7

r - Revised.

(a) U.S. dollar basis.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

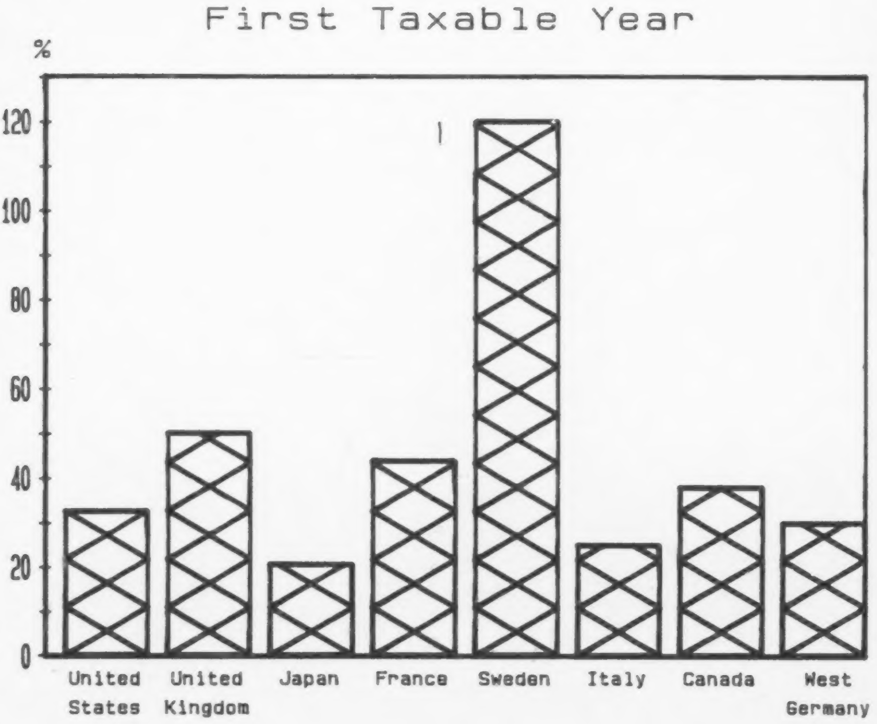
COST RECOVERY ALLOWABLE FOR TAX PURPOSES
ON MACHINERY AND EQUIPMENT, 1984
(Percent of Original Cost)

Country	Recovery Period (Years)	First Year	Third Year	Seventh Year
United States	5	32.4%	75.4%	117.4%
United Kingdom	11	50.0	71.9	91.1
Japan	10	20.6	50.0	80.1
France	8	43.8	73.4	95.8
Sweden	1	120.0	120.0	120.0
Italy	6	25.0	75.0	100.0
Belgium	7	33.0	61.8	102.0
Canada	3	38.0	106.2	106.2
Netherlands	8	45.0	70.0	120.0
West Germany	10	30.0	65.7	91.7
Australia	5	20.0	60.0	100.0

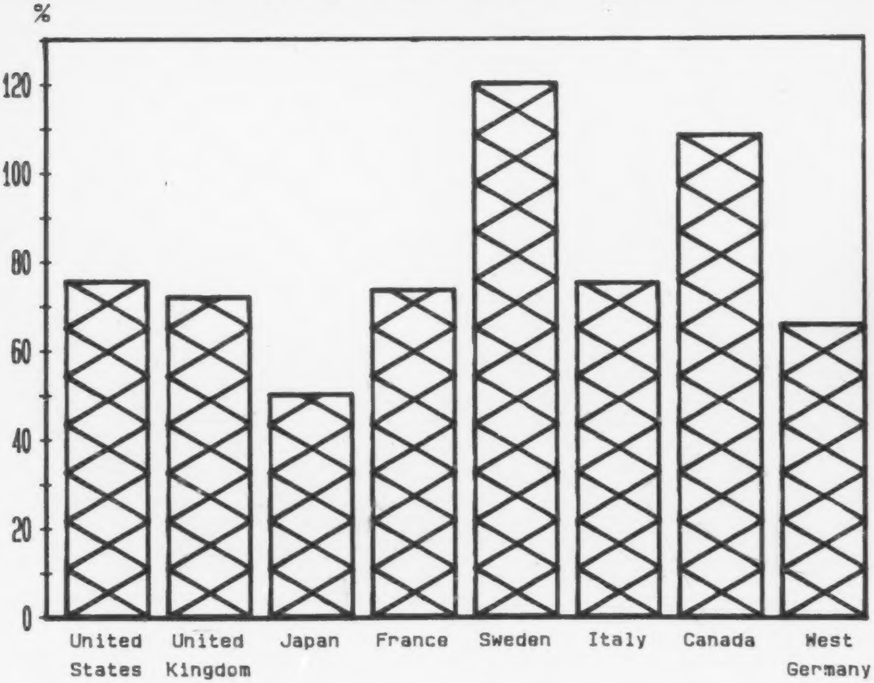
Note: These capital cost recovery allowances are based on current statutory or other published provisions of law. As such they do not reflect the informal or ad hoc arrangements that are frequently available in foreign countries to increase the rate of cost recovery actually allowed to industrial producers.

Source: Report of the President's Task Force on Business Taxation, September 1970, pages 28-29 updated by Price Waterhouse & Company. The most recent data is for the year 1984.

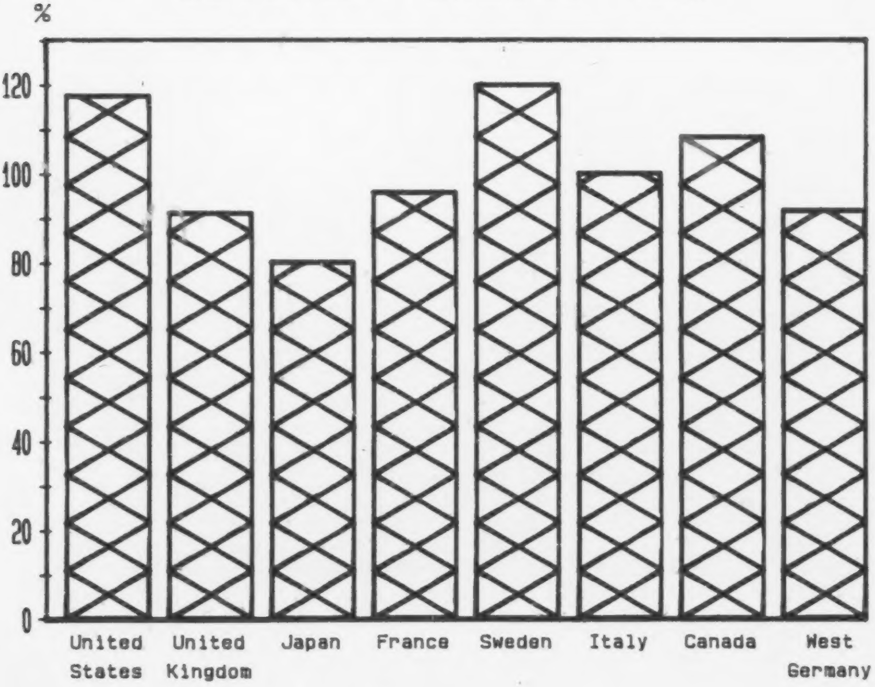
Cost recovery allowable for tax purposes includes depreciation as well as any tax credits. Where credits are available, total allowable cost recovery can exceed 100% of the original purchase cost. The rate of depreciation determines how quickly these costs are recovered. The percent values as stated are based on accelerated depreciation rates applicable in each country on a "typical" piece of capital equipment. At the end of the depreciation period, the taxable profits of the enterprise will have been reduced by the allowable cost recovery. The actual tax savings will depend on the tax rate prevailing in the specific country.



Third Taxable Year



Seventh Taxable Year



FEDERAL, STATE AND LOCAL TAX REVENUES AS PERCENT OF GNP, 1983
Selected Countries

Country	Total	Sales & Excise (a)	Social Security Total (b)	Corporate Income	Non-Corporate Income (c)	Other (d)
Belgium	45.7%	11.3%	14.0%	2.7%	16.0%	1.7%
Canada	34.8	9.1	4.6	2.6	12.4	6.2
Denmark	48.1	16.6	1.9	1.4	25.0	3.2
France	42.3	12.5	19.4	1.9	5.9	2.5
Italy	40.7	8.9	14.6	3.8	11.4	2.1
Japan	27.5	3.6	8.2	5.4	7.0	3.2
Luxembourg	37.5	8.7	9.4	6.8	10.2	2.7
Netherlands	45.2	9.9	20.3	2.8	9.6	2.5
Sweden	51.7	12.0	13.9	1.8	20.1	3.9
Switzerland	30.1	5.4	9.4	1.8	10.7	2.8
Turkey	21.0	6.8	1.1	2.3	9.3	1.4
United Kingdom	37.5	10.5	6.6	4.1	10.4	5.9
United States	28.1	4.4	8.1	1.6	10.4	3.7
West Germany	37.2	9.8	13.3	1.9	10.5	1.7

(a) Includes general sales, value added, and specific excise taxes.
(b) Includes contributions of employers, employees, and self-employed.
(c) Includes income taxes on individual and unincorporated enterprise.
(d) Includes taxes on net wealth and immovable property, taxes and stamp duties on gifts, inheritances, etc.

Source: "Revenue Statistics of OECD Member Countries," (Annual).

SOCIAL SECURITY TAX REVENUES AS PERCENT OF GNP, 1983
Selected Countries

Country	Total (a)	Employees	Employers	Self-Employed and Other
Belgium	14.0%	4.8%	8.0%	1.2%
Canada	4.6	1.6	2.9	0.1
Denmark	1.9	1.0	0.9	0.0
France	19.4	5.2	12.9	1.4
Italy	14.6	2.9	10.5	1.2
Japan	8.2	2.9	4.2	1.2
Luxembourg	9.4	4.0	4.9	0.5
Netherlands	20.3	9.0	8.0	3.3
Sweden	13.9	0.0	13.3	0.6
Switzerland	9.4	3.0	3.1	0.6
Turkey	1.1	0.4	0.7	0.0
United Kingdom	6.6	3.0	3.4	0.2
United States	8.1	3.1	4.7	0.2
West Germany	13.3	5.9	7.1	0.2

NA - Not Available.

(a) The category is broadly defined to include all tax payments to institutions of general government providing social welfare benefits, provided they are levied as a function of pay or as a fixed amount per person. Thus, for the United States, this category includes contributions to the railroad retirement fund, unemployment insurance fund, workmen's compensation fund, and civil service retirement program in addition, of course, to the more familiar social security payments made pursuant to the Federal Insurance Contributions Act (FICA).

Source: "Revenue Statistics of OECD Member Countries," (Annual).

3

U. S. MACHINE TOOL INDUSTRY

The "Machine Tool Industry" actually consists of two industries according to the government's Standard Industrial Classification system (SIC); Metal Cutting Machine Tools (SIC 3541) and Metal Forming Machine Tools (SIC 3542).

The distinction between "industries" and "products" should be clearly kept in mind to avoid confusion in studying the statistical data in this Handbook. In brief, the machine tool industry produces not only machine tools but other products. The reverse of this is also true—not all machine tools are produced by the machine tool industry—some other industries also produce machine tools.

The machine tool industry is made up of the establishments whose "primary products" are machine tools. Data on shipments by the machine tool industry covers the totality of the shipments of the establishments in the industry. This means that not only the machine tools but also "secondary products"—products that are generally produced by other industries—are covered. Such secondary products may be tooling, machine tool accessories, abrasive products, wood- or plastic-working machines, or a variety of other products.

To measure the degree to which an industry produces its primary and secondary products, the Census Bureau has developed a "primary specialization ratio" which describes the proportion of total product shipments that are "primary products". For the metal cutting industry this specialization ratio was 91% for 1982. This means that 91% of the products shipped by this industry were metal cutting machine tools and 9% were products other than metalcutting machine tools. For metal forming, the corresponding figures are 89% and 11%.

The Bureau of the Census reports not only "industry" totals but also "product" totals. To obtain a product total, it adds to the machine tools produced by the machine tool industry all the machine tools produced by other industries as secondary products.

In addition to the industry specialization ratio described above, the Census has developed a ratio to describe the proportion of primary products produced by the establishments classified in the industry to total shipments of such products by all manufacturing establishments. This ratio is called the "coverage ratio". In 1982, the coverage ratio in metal cutting was 93%, in metal forming 87%. This means that the metal cutting industry produced 93% of all metal cutting machine tools produced in the U.S., the metal forming industry 87% of all American metal forming machine tools.

The data in Chapter 3 deal exclusively with the machine tool INDUSTRY. Chapter 4 deals with PRODUCTS—total machine tool orders and shipments. As already indicated, industry data are based on the Standard Industrial Classification system. This system was developed to classify establishments by type of activity—it covers the entire field of economic activities. The system is structured by digits. The first two digits identify the major industry group, the third digit identifies the industry group, and the fourth digit identifies the industry. The fifth, sixth, and seventh digits are used to define product classes (fifth) and individual products (sixth and seventh). For example:

Industries	Major Group 35:	Machinery, Except Electrical
	Group 354:	Metalworking Machinery, and Equipment
	Industry 3541:	Machine Tools, Metal Cutting Types
Products	Product Class 35413:	Gear Cutting Machines
	Product 3541371:	Gear Tooth Finishing Machines

Size of the Industry

The machine tool industry is relatively small compared to other U.S. industries. Many of the larger industrial corporations have more employees and a higher value of product shipments than the entire machine tool industry. If all of the machine tool industry were combined into one firm, its sales would rank 151st on the 1985 "Fortune 500" listing of America's largest manufacturing companies.

While the most recent Census of Manufactures (1982) reports almost 1,400 establishments in SIC 3541 and SIC 3542, estimates by the NMTBA and Census Bureau indicate that approximately 40% of these plants primarily manufacture machine tool accessories, dies, tools, jigs and fixtures rather than machine tools. According to the 1982 Census, two-thirds of these establishments had fewer than 20 employees.

Location of the Industry

During the 19th century, the machine tool industry was located almost entirely in New England. Its center moved southward into the Middle Atlantic States and Pennsylvania and then west into Ohio and other parts of the Middle West as the 1800's drew to a close. Development and growth were closely related to the growth of other industries such as textile machinery, small arms, watches and clocks, ships, railroads, farm machinery, and bicycles. By 1900, Cincinnati had become the leading machine tool center, Philadelphia was second, Providence, R.I., third. In the 1920's the rapid growth of the automobile industry accounted for the rapid growth of machine tool production in Michigan and Illinois. The decline of Pennsylvania as a machine tool producer was closely related to the decline of the locomotive. Today, the leading metal cutting machine tool producing states are Ohio, Michigan, Illinois, Connecticut, New York, and Wisconsin, and the leading metal forming machine tool producers are Illinois, Ohio, Michigan, New York, and Connecticut.

Sources of Industry Data

Data on the machine tool industry comes from the Census of Manufactures (which takes place every five years) and the Annual Survey of Manufactures. The Census is based on reports from individual establishments and is very detailed. However, the Census suffers from several shortcomings. It focuses primarily on large establishments, thus data on smaller establishments are less reliable. Much of the data published for smaller firms is actually not the product of either the Census or the Annual Surveys. Instead, most of the data for firms with fewer than twenty employees is estimated from administrative records on payroll and sales supplied to the Census Bureau by other government agencies. It is often the case that over ninety percent of the data on small firms is the product of these administrative record based estimates.

A second problem with the Census is that it is published with a considerable time lag. Because 1982 was a Census year and because of the time lag in the publication of the Census data, many of the charts and tables in this chapter were previously published using preliminary Census statistics. The final Census data were published in early 1985 and all charts and tables citing the Census have been revised to reflect these final statistics.

In general, the industry finds that its own data, and those released quarterly by the government as "Current Industrial Reports" (MQ-35W), are more useful and timely. The main value of the 5-year Census lies in the broader coverage and in the fact that shipment, employment, compensation, and other data are all available for the same population. This permits the calculation of ratios otherwise not available. The Annual Survey of Manufactures is based on sample surveys and covers fewer items than the Census. It is also published with a considerable delay between the time of data collection and distribution.

THE MACHINE TOOL INDUSTRY (a)

General Statistics, 1958 to Date

Year	Establishments		Employees (Number)	Value Added by Manufacturer	Cost of Materials	Value of Shipments
	Total	With 20 or More Employees		(Millions of Dollars)		
TOTAL INDUSTRY, SIC 3541 and 3542						
1958	918	378	75,366	$ 597.0	$ 347.8	$ 997.5
1959	NA	NA	75,091	737.4	403.3	1,111.5
1960	NA	NA	81,200	815.8	468.7	1,265.7
1961	NA	NA	78,108	771.8	456.4	1,241.9
1962	NA	NA	82,251	936.8	513.7	1,430.3
1963	1,167	415	83,136	980.6	547.0	1,502.2
1964	NA	NA	88,079	1,154.7	678.7	1,790.7
1965	NA	NA	96,344	1,342.6	813.5	2,107.2
1966	NA	NA	108,174	1,666.3	981.3	2,553.8
1967	1,253	506	116,400	1,828.5	1,062.3	2,841.2
1968	NA	NA	112,200	1,830.4	988.9	2,817.3
1969	NA	NA	110,600	1,894.6	1,034.7	2,834.8
1970	NA	NA	100,200	1,581.7	992.6	2,597.8
1971	NA	NA	78,400	1,183.7	751.2	2,018.8
1972	1,277	437	76,600	1,319.4	821.6	2,114.4
1973	NA	NA	86,900	1,760.6	1,134.9	2,777.3
1974	NA	NA	94,000	2,250.7	1,523.3	3,579.8
1975	NA	NA	88,800	2,258.6	1,533.5	3,834.4
1976	NA	NA	81,000	2,285.2	1,286.2	3,566.9
1977	1,343	469	83,100	2,588.0	1,491.7	3,943.3
1978	NA	NA	89,500	3,108.3	1,994.1	4,977.8
1979	NA	NA	96,100	3,837.8	2,423.9	6,052.5
1980	NA	NA	99,700	4,391.3	2,744.6	6,980.7
1981	NA	NA	98,300	4,716.4	2,850.0	7,481.0
1982	1,392	455	77,800	3,294.0	2,172.9	5,840.2
1983	NA	NA	58,300	2,242.3	1,554.9	4,023.2

NA - Not available.

(a) The machine tool industry (Standard Industrial Classification SIC 3541 and 3542) produces primarily metal cutting and metal forming machine tools. It also produces other (secondary) products, such as small cutting tools, attachments and accessories and others. These secondary products as well as machine tool parts and some other items are included in this table. It therefore differs from other Census and NMTBA data on shipments of machine tools.

Sources: U.S. Bureau of the Census, "Census of Manufactures, 1963, 1967, 1972, 1977, 1982, 1983 Metalworking Machinery and Equipment" and "Annual Survey of Manufactures."

THE MACHINE TOOL INDUSTRY (a)
General Statistics, 1963 to Date
Metal Cutting and Metal Forming

Year	Establishment Total	Establishment With 20 or More Employees	Employees (Number)	Value Added by Manufacturer (Millions of Dollars)	Cost of Materials (Millions of Dollars)	Value of Shipments (Millions of Dollars)
METAL CUTTING MACHINE TOOL INDUSTRY, SIC 3541						
1963	801	269	61,058	$ 699.3	$ 381.6	$1,050.8
1965	NA	NA	70,827	993.6	559.2	1,524.4
1966	NA	NA	79,767	1,234.2	669.4	1,826.1
1967	903	338	87,200	1,391.3	766.9	2,127.2
1968	NA	NA	84,300	1,377.1	718.9	2,099.1
1969	NA	NA	82,600	1,441.5	744.5	2,108.3
1970	NA	NA	71,300	1,112.1	664.0	1,821.7
1971	NA	NA	54,000	819.8	473.2	1,351.1
1972	894	275	52,500	901.7	536.3	1,418.1
1973	NA	NA	59,900	1,214.1	764.1	1,891.1
1974	NA	NA	65,000	1,617.0	1,017.9	2,480.5
1975	NA	NA	62,800	1,640.3	1,050.3	2,727.8
1976	NA	NA	58,100	1,664.1	852.3	2,496.2
1977	917	306	59,400	1,866.1	1,047.7	2,812.7
1978	NA	NA	64,300	2,267.0	1,417.7	3,611.8
1979	NA	NA	69,100	2,833.8	1,736.9	4,389.0
1980	NA	NA	72,800	3,349.2	2,026.1	5,227.6
1981	NA	NA	74,300	3,739.9	2,187.3	5,865.3
1982(r)	940	293	58,300	2,516.2	1,598.3	4,411.5
1983	NA	NA	43,000	1,612.7	1,100.0	2,880.9
METAL FORMING MACHINE TOOL INDUSTRY, SIC 3542						
1963	366	146	22,078	$ 281.3	$ 165.4	$ 441.4
1965	NA	NA	25,517	349.0	254.3	582.8
1966	NA	NA	28,407	432.1	311.9	727.7
1967	350	168	29,200	437.2	295.4	714.0
1968	NA	NA	27,900	270.0	718.2	453.3
1969	NA	NA	28,000	453.1	290.2	726.5
1970	NA	NA	28,900	469.6	328.6	776.1
1971	NA	NA	24,400	363.9	278.0	667.7
1972	383	162	24,100	417.7	285.3	696.3
1973	NA	NA	27,000	546.5	370.8	886.2
1974	NA	NA	29,000	633.7	505.4	1,099.3
1975	NA	NA	26,000	618.3	483.2	1,106.6
1976	NA	NA	22,900	621.1	433.9	1,070.7
1977	426	163	23,700	721.9	444.0	1,130.6
1978	NA	NA	25,200	841.3	576.4	1,366.0
1979	NA	NA	27,000	1,004.0	687.0	1,663.5
1980	NA	NA	26,900	1,042.1	718.5	1,753.1
1981	NA	NA	24,000	976.5	662.7	1,615.7
1982	452	162	19,500	777.8	574.6	1,428.7
1983	NA	NA	15,300	629.6	454.9	1,142.3

NA - Not Available. r - Revised.

(a) The machine tool industry (Standard Industrial Classifications SIC 3541 and 3542) produces primarily metal cutting and metal forming machine tools. It also produces other (secondary) products, such as small cutting tools, attachments and accessories and others. These secondary products as well as machine tool parts and some other items are included in this table. It therefore differs from other Census and NMTBA data on shipments of machine tools.

Sources: U.S. Bureau of the Census, "Census of Manufactures, 1963, 1967, 1972, 1977, 1982, 1983 Metalworking Machinery and Equipment" and "Annual Survey of Manufactures."

LOCATION OF THE MACHINE TOOL INDUSTRY (c)

Establishments, Employees, Value Added, Shipments, By Region For Selected Years, 1963 to 1982

Region	Establishments		Employees (Number)	Value Added by Manufacture	Value of Shipments
	Total	With 20 or More Employees		(Million Dollars)	
U.S. TOTAL					
1963	1,167	415	83,136	$ 980	$1,502
1967	1,253	506	116,400	1,828	2,841
1972	1,277	437	76,600	1,319	2,114
1977	1,343	469	83,200	2,593	3,950
1982	1,392	455	77,600	3,332	5,869
NEW ENGLAND					
1963	150	52	16,934	183	273
1967	149	68	25,300	366	550
1972	140	52	2,000(a)	32(a)	48(a)
1977	155	56	D	56(a)	D
1982(d)	166		14,590E	D	D
MIDDLE ATLANTIC					
1963	251	60	11,618	148	212
1967	239	71	13,400	215	299
1972	218	64	10,400	175	270
1977	197	57	7,000(b)	205(b)	286(b)
1982(d)	178	53	12,100E	280(b)	424(b)
EAST NORTH CENTRAL					
1963	545	239	49,415	592	926
1967	578	270	67,500	1,100	1,764
1972	620	240	45,500	793	1,308
1977	595	252	48,200	1,535	2,389
1982(d)	565	228	39,200E	D	D
WEST NORTH CENTRAL					
1963	44	16	1,085	11	16
1967	46	22	2,600	38	57
1972	50	25	2,400	43	65
1977	52	23	D	D	D
1982(d)	104	37	6,810E	D	D
SOUTH					
1963	47	12	1,068	13	19
1967	61	29	3,200	44	63
1972	82	21	1,000(a)	19(a)	30(a)
1977	40	12	975E	5(b)	7(b)
1982(d)	71	22	1,630E	D	D
WEST					
1963	130	28	3,016	35	55
1967	180	46	4,400	67	109
1972	168	36	2,000(a)	39(a)	64(a)
1977	162	40	3,000E	65(b)	96(b)
1982(d)	165	32	2,910E	57(b)	100(b)

D - Withheld to avoid disclosure. E - Estimate.

(a) Includes metal forming data only, metal cutting data withhold to avoid disclosure.
(b) Includes metal cutting data only, metal forming data withhold to avoid disclosure.
(c) Due to a change of methodology at the Bureau of Census some States' data are withheld, therefore regional data may not add to U.S. Total.
(d) The regional data includes states with 150 employees or more.

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982 Industry Series: Metalworking Machinery and Equipment, MC82-1-35C" and earlier issues. See chapter introduction.

LOCATION OF THE METAL CUTTING MACHINE TOOL INDUSTRY (a)
General Statistics by Region
For Selected Years, 1963 to 1982

Region	Establishments: Total	Establishments: With 20 or More Employees	Employees (Number)	Value Added by Manufacture (Million Dollars)	Value of Shipments (Million Dollars)
U.S. TOTAL					
1963	801	269	61,058	$ 699	$1,061
1967	903	338	87,200	1,391	2,127
1972	894	275	52,500	902	1,418
1977	919	307	59,500	1,871	2,819
1982	940	293	58,100	2,555	4,440
NEW ENGLAND					
1963	111	39	14,853	160	238
1967	120	51	22,900	329	492
1972	109	40	D	D	D
1977	122	44	D	D	D
1982(b)	129	42	13,680E	D	D
MIDDLE ATLANTIC					
1963	163	40	7,106	89	120
1967	163	44	8,100	145	189
1972	145	35	6,500	115	166
1977	125	33	7,000	205	286
1982(b)	103	30	7,400	280	424
EAST NORTH CENTRAL					
1963	387	161	36,845E	425	662
1967	428	191	49,900	824	1,303
1972	438	154	31,000	538	875
1977	440	179	34,600	1,105	1,717
1982(b)	397	156	28,300E	D	D
WEST NORTH CENTRAL					
1963	24	11	547	5	8
1967	26	10	1,600	25	36
1972	29	13	1,500	27	41
1977	28	13	D	D	D
1982(b)	83	28	5,710E	D	D
SOUTH					
1963	26	4	463	6	9
1967	37	15	2,200	31	41
1972	52	12	D	D	D
1977	17	2	200	5	7
1982(b)	63	17	1,410E	D	D
WEST					
1963	90	14	1,244	15	24
1967	129	27	2,500	38	66
1972	121	21	D	D	D
1977	104	18	1,700	65	96
1982(b)	111	14	1,600	57	100

D - Withheld to avoid disclosure. E - Estimate.

(a) Due to a change in methodology at the Bureau of Census some States' data are withheld, therefore regional data may not add to U.S. Total.

(b) The regional data includes states with 150 employees or more.

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982 Industry Series: Metalworking Machinery and Equipment, MC82-1-35C" and earlier issues. See chapter introduction.

LOCATION OF THE METAL FORMING MACHINE TOOL INDUSTRY (a)

General Statistics by Region
For Selected Years, 1963 to 1982

	Establishments			Value Added by Manufacture	Value of Shipments
Region	Total	With 20 or More Employees	Employees (Number)	(Million Dollars)	
U.S. Total					
1963	366	146	22,078	$ 281	$ 441
1967	350	168	29,200	437	714
1972	383	162	24,100	418	696
1977	426	163	23,700	722	1,131
1982	452	162	19,500	778	1,429
NEW ENGLAND					
1963	39	13	2,081	23	35
1967	29	17	2,400	37	58
1972	31	12	2,000	32	48
1977	33	12	D	56	D
1982(b)	37	11	910E	D	D
MIDDLE ATLANTIC					
1963	88	28	4,512	59	92
1967	76	27	5,300	70	110
1972	73	29	3,900	60	104
1977	72	24	D	D	D
1982(b)	75	23	4,700E	D	D
EAST NORTH CENTRAL					
1963	158	78	12,570	167	264
1967	150	79	17,600	276	461
1972	182	86	14,500	256	433
1977	155	73	13,600	430	672
1982(b)	168	72	10,900E	D	D
WEST NORTH CENTRAL					
1963	20	5	538	6	8
1967	20	12	1,000	13	21
1972	21	12	900	16	24
1977	24	10	D	D	D
1982(b)	21	9	1,100E	D	D
SOUTH					
1963	21	8	605	7	10
1967	24	14	1,000	13	22
1972	30	9	1,000	19	30
1977	23	10	955E	D	D
1982(b)	8	5	220E	D	D
WEST					
1963	40	14	1,772	20	31
1967	51	19	1,900	29	43
1972	47	15	2,000	39	64
1977	58	22	1,300E	D	D
1982(b)	54	18	1,300E	D	D

D - Withheld to avoid disclosure. E - Estimate.

(a) Due to a change in methodology at the Bureau of Census some States' data are withheld, therefore regional data may not add to U.S. Total.

(b) The regional data includes states with 150 employees or more.

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982 Industry Series: Metalworking Machinery and Equipment, MC82-1-35(C)" and earlier issues. See chapter introduction.

LOCATION OF THE METAL CUTTING MACHINE TOOL INDUSTRY
General Statistics by Region
1977 to 1982

	Establishments			Value Added by Manufacture	Value of Shipments
	Total	With 20 or More Employees	Employees (Number)	(Million Dollars)	
STATE			1977		
California	95	16	1,500	$ 60	$ 89
Connecticut	46	18	4,600	148	234
Illinois	94	39		196	291
Indiana	25	8	1,400	39	57
Iowa	6	4	500	12	21
Massachusetts	37	10	2,200	66	92
Michigan	190	74	9,200	358	566
Minnesota	20	7	1,300	40	58
New Jersey	31	6	400	10	15
New York	52	16	4,700	148	204
Ohio	95	40	13,900	389	624
Pennsylvania	42	11	1,900	48	66
Rhode Island	20	7	2,400	62	82
Texas	17	2	200	5	7
Vermont	6	4	2,800	67	117
Washington	9	2	200	5	7
Wisconsin	36	18	3,700	128	180
STATE			1982(d)		
California	93	12	1,400	50	$ 88
Connecticut	61	17	5,100	180	326
Florida	20	2	200	5	9
Illinois	90	30	5,400	208	358
Indiana	22	4	1,300	36	83
Iowa	4	2	(b)	D	D
Kansas		2	(b)	D	D
Kentucky	7	4	(b)	D	D
Maine	6	2	(b)	D	D
Massachusetts	35	11	2,600	114	176
Michigan	203	83	8,900	491	1,056
Minnesota	24	6	1,200	49	73
Missouri	7	1	200	3	8
New Hampshire	5	3	(c)	D	D
New Jersey	27	4	400	17	28
New York	42	14	4,900	176	275
North Carolina	8	4	200	8	22
Ohio	75	35	12,300	547	934
Pennsylvania	34	12	2,100	86	121
Rhode Island	16	5	(c)	D	D
South Carolina	5	2	(a)	D	D
South Dakota	3	2	(a)	D	D
Tennessee	3	1	(a)	D	D
Texas	22	6	(b)	D	D
Vermont	6	4	2,600	91	153
Virginia	5	2	(b)	D	D
Washington	18	2	200	7	12
Wisconsin	38	15	3,400	255	375

D – Withheld to avoid disclosure.

(a) 150 – 249 Employees.
(b) 250 – 499 Employees.
(c) 1,000 – 2,499 Employees.
(d) Data includes only states with 150 machine tool employees or more.

Source: U.S. Bureau of the Census, "Census of Manufactures 1977, 1982 Industry Series: Metalworking Machinery and Equipment, MC82 – 1 – 35C" and earlier issues. See chapter introduction.

LOCATION OF THE METAL FORMING MACHINE TOOL INDUSTRY
General Statistics by Region
1977 to 1982

	Establishments			Value Added by Manufacture	Value of Shipments
	Total	With 20 or More Employees	Employees (Number)	(Million Dollars)	
STATE			1977		
California	47	16	1,100	$ 37	$ 62
Colorado	8	4	400	10	17
Connecticut	24	10	1,800	50	72
Illinois	52	25	6,400	177	276
Indiana	11	7	600	18	31
Kansas	5		300	7	12
Michigan	58	22	2,000	68	110
Missouri	12	6	300	5	8
New York	29	11	2,200	65	96
Ohio	34	19	4,600	167	255
Pennsylvania	19	7	900	37	59
Texas	10	4	200	4	6
STATE			1982(d)		
California	42	13	1,000	38	$ 79
Colorado	6	3	(a)	D	D
Connecticut	24	9	800	28	48
Illinois	56	25	4,400	232	397
Indiana	10	7	(b)	D	D
Kansas	5	3	300	10	19
Massachusetts	13	2	(a)	D	D
Michigan	55	22	1,600	67	117
Minnesota	5	2	(b)	D	D
Missouri	11	4	300	9	15
New Jersey		4	(b)	D	D
New York	31	9	1,700	49	91
North Carolina	4	3	(a)	D	D
Ohio	47	18	4,400	173	329
Pennsylvania	24	10	(c)	D	D
Virginia	4	2	(a)	D	D
Washington	6	2	200	8	12

D – Withheld to avoid disclosure.

(a) 150 – 249 Employees.
(b) 250 – 499 Employees.
(c) 1,000 – 2,499 Employees.
(d) Machine tool employees or more.

Source: U.S. Bureau of the Census, "Census of Manufactures 1977, 1982 Industry Series: Metalworking Machinery and Equipment, MC82 – 1 – 35C" and earlier issues. See chapter introduction.

THE MACHINE TOOL INDUSTRY
By Employment Size of Establishment
For Selected Years, 1963 to 1982

	1963	1967	1972	1977	1982
Number of Companies	1,146	1,209	1,232	1,285	1,290
Number of Establishments	1,167	1,253	1,277	1,345	1,392
Number of Employees	83,136	116,400	76,600	83,100	77,600(e)
1 to 4 Employees					
Establishments	375	336	380	434	433
Employees	714	500	800	800	900
5 to 9 Employees					
Establishments	191	189	212	262	279
Employees	1,295	1,300	1,500	1,700	1,900
10 to 19 Employees					
Establishments	186	222	248	178	225
Employees	2,612	3,100	3,400	2,400	3,000
20 to 49 Employees					
Establishments	182	218	194	219	202
Employees	5,643	6,500	6,000	6,700	6,200
50 to 99 Employees					
Establishments	96	111	89	98	110
Employees	6,455	7,700	6,200	6,700	7,600
100 to 249 Employees					
Establishments	67	79	83	75	75
Employees	10,620	12,700	12,500	11,500	11,900
250 to 499 Employees					
Establishments	31	43	37	41	29
Employees	11,249	15,100	12,600	14,800	9,700
500 to 999 Employees					
Establishments	22	30	24	27	31
Employees	15,583	21,400	17,600	21,700(a)	22,100(a)
1000 to 2499 Employees					
Establishments	22	8	8	7	14
Employees	19,236	35,500	16,200(b)	16,600(b,d)	14,200(b,d)
2500 Employees or More					
Establishments	3	3	2	1	1
Employees	9,729	12,400	(c)	(c)	(c)
Covered by Administrative Records (f)					
Establishments	NA	330	355	673	740
Employees	NA	700	900	3,200	3,800

NA - Not Available.

(a) Also includes data for the "1000 to 2499 Employees" (metal forming only) category.
(b) Includes only metal cutting to avoid disclosure.
(c) The number of employees is included in the "1000 - 2499 Employees" category.
(d) Also includes data for the "2500 Employees or More" (metal cutting only) category.
(e) Due to estimating procedures by the Census department, individual items may not add to total.
(f) See chapter 3 introduction for an explanation.

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982 Industry Series: Metalworking Machinery and Equipment, MC82 - 1 - 35C," and earlier issues. See chapter introduction.

THE METAL CUTTING MACHINE TOOL INDUSTRY
By Employment Size of Establishment
For Selected Years, 1963 to 1982

	1963	1967	1972	1977	1982
Number of Companies	784	865	857	874	860
Number of Establishments	801	903	894	919	940
Number of Employees	61,058	87,200	52,500	59,400	58,100
1 to 4 Employees					
Establishments	276	256	281	315	295
Employees	529	400	600	600	600
5 to 9 Employees					
Establishments	127	142	158	184	202
Employees	840	1,000	1,100	1,200	1,400
10 to 19 Employees					
Establishments	129	167	180	112	150
Employees	1,803	2,300	2,500	1,500	2,000
20 to 49 Employees					
Establishments	118	145	126	144	122
Employees	3,607	4,300	3,900	4,400	3,800
50 to 99 Employees					
Establishments	56	74	55	67	73
Employees	3,727	5,200	3,800	4,600	4,900
100 to 249 Employees					
Establishments	44	49	47	40	45
Employees	6,912	8,100	7,000	6,300	7,000
250 to 499 Employees					
Establishments	22	30	24	28	22
Employees	7,713	10,600	8,400	10,300	7,500
500 to 999 Employees					
Establishments	15	20	14	19	24
Employees	10,664	13,900	9,200	13,800	16,700
1000 to 2499 Employees					
Establishments	11	17	7	7	6
Employees	15,534	28,900	16,200(a)	16,600(a)	14,200(a)
2500 Employees or More					
Establishments	3	3	2	1	1
Employees	9,729	12,400	(b)	(b)	(b)
Covered by Administrative Records (c)					
Establishments	NA	245	265	455	545
Employees	NA	500	700	1,800	2,900

NA - Not Available.

(a) Also includes data for the "2500 Employees or More" category.
(b) The number of employees is included in the "1000-2499 Employees" category.
(c) See chapter 3 introduction for an explanation.

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982 Industry Series: Metalworking Machinery and Equipment, MC82-1-35C," and earlier issues. See chapter introduction.

THE METAL FORMING MACHINE TOOL INDUSTRY
By Employment Size of Establishment
For Selected Years, 1963 to 1982

	1963	1967	1972	1977	1982
Number of Companies	362	344	375	411	430
Number of Establishments	366	350	383	426	452
Number of Employees	22,078	29,200	24,100	23,700	19,500
1 to 4 Employees					
Establishments	99	80	99	119	138
Employees	185	100	200	200	300
5 to 9 Employees					
Establishments	64	47	54	78	77
Employees	455	300	400	500	500
10 to 19 Employees					
Establishments	57	55	68	66	75
Employees	809	800	900	900	1,000
20 to 49 Employees					
Establishments	64	73	68	75	80
Employees	2.036	2,2[illegible]	2,100	2,300	2,400
50 to 99 Employees					
Establishments	40	37	34	31	37
Employees	2,728	2,500	2,400	2,100	2,700
100 to 249 Employees					
Establishments	23	30	36	35	30
Employees	3,708	4,600	5.500	5,200	4,900
250 to 499 Employees					
Establishments	9	13	13	13	7
Employees	3,536	4,500	4,200	4,500	2,200
500 to 999 Employees					
Establishments	7	10	10	8	7
Employees	4,9[illegible]	7,500	8,400(a)	7,900(a)	5,400(a)
1000 to 2499 Employees					
Establishments	3	5	1	1	1
Employees	3,702	6,600	(c)	(c)	(c)
2500 Employees or More					
Establishments	—	—	—	—	—
Employees	—	—	—	—	—
Covered by Administrative Records (d)					
Establishments	NA	85	90	218	195
Employees	NA	200	200	1,400	900

NA - Not Available.

(a) Also includes data for the "1000 to 2499 Employees" category.
(b) Due to estimating procedures by the Census department, individual items may not add to total.
(c) The number of employees is included in the "500-999 Employees" category.
(d) See chapter 3 introduction for an explanation.

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982 Industry Series: Metalworking Machinery and Equipment, MC82-1-35C," and earlier issues. See chapter introduction.

INVENTORIES OF THE MACHINE TOOL INDUSTRY

End of Year, Selected Years, 1967 to Date

(Millions of Dollars)

	Total Machine Tool Industry	Metal Cutting SIC 3541	Metal Forming SIC 3542
TOTAL INVENTORIES			
1967	$ 743.1	$ 535.3	$207.8
1971	726.0	492.8	233.2
1972	724.9	482.2	242.7
1973	885.7	591.9	293.8
1974	1,150.0	786.2	363.8
1975	1,100.4	737.9	362.5
1976	1,048.3	735.4	312.9
1977	1,238.0	878.4	359.6
1978	1,434.0	1,012.3	421.7
1979	1,689.2	1,242.2	447.0
1980	1,874.6	1,419.4	455.2
1981	2,359.1	1,764.9	594.2
1982	1,943.1	1,431.6	511.5
Finished Products			
1967	158.9	112.1	46.8
1971	186.1	123.2	62.9
1972	173.6	112.8	60.7
1973	174.7	111.0	63.7
1974	223.8	148.3	75.5
1975	244.6	166.0	78.6
1976	233.5	168.9	64.6
1977	264.7	184.2	80.5
1978	282.4	199.7	82.7
1979	312.1	222.3	89.8
1980	354.1	253.5	100.6
1981	507.1	343.6	163.5
1982	501.0	355.6	145.4
Work in Process			
1967	442.0	329.5	112.5
1971	385.5	278.3	107.2
1972	395.2	279.8	115.4
1973	521.2	371.4	149.8
1974	678.2	492.6	185.6
1975	618.1	447.7	170.4
1976	596.3	443.8	152.5
1977	717.6	537.5	180.1
1978	868.5	642.3	226.2
1979	1,042.8	812.5	230.3
1980	1,220.3	989.4	230.9
1981	1,413.2	1,117.4	295.8
1982	1,047.1	809.5	237.6
Materials, Supplies, Fuel, Etc.			
1967	142.2	93.7	48.5
1971	154.4	91.3	63.1
1972	156.2	89.6	66.6
1973	189.8	109.5	80.3
1974	248.0	145.3	102.7
1975	237.7	124.2	113.5
1976	218.4	122.7	95.7
1977	255.7	156.7	99.1
1978	283.1	170.3	112.8
1979	334.3	207.4	126.9
1980	300.0	176.4	123.6
1981	438.7	303.8	134.9
1982	395.0	266.5	128.5

Sources: U.S. Bureau of the Census, "Census of Manufactures, 1982 Industry Series: Metalworking Machinery and Equipment, MC82(1)-35C" and earlier issues; U.S. Bureau of the Census, "Annual Survey of Manufactures." See chapter introduction.

PRODUCTS OF THE METAL CUTTING AND FORMING INDUSTRIES

Selected Years, 1967 to 1982

(Values in Millions of Dollars)

Metal Cutting Industry (3541)	TOTAL SHIPMENTS	Metal Cutting Machine Tools	Secondary Products	Miscellaneous Receipts	% Primary Product Specialization
1967	$2,127.2	$1,715.7	$269.7	$141.8	86%
1972	1,418.1	1,135.5	188.9	93.7	86
1977	2,812.7	2,353.9	337.0	121.8	87
1982	4,440.2	3,877.2	369.5	193.6	91

Metal Cutting Industry (3541)	TOTAL SHIPMENTS	Metal Forming Machine Tools	Secondary Products	Miscellaneous Receipts	% Primary Product Specialization
1967	$ 714.0	$ 568.4	$ 99.5	$ 46.1	85%
1972	696.3	583.6	73.1	39.6	89
1977	1,130.6	967.1	111.6	51.9	90
1982	1,428.7	1,210.5	143.6	74.6	89

Note: "Primary Product Specialization" is arrived at by dividing "Primary Products" by "Primary Products plus Secondary Products."

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982; Industry Series: Metalworking Machinery and Equipment MC82-1-35C" and earlier issues. See chapter introduction.

SELECTED MATERIALS CONSUMED

By the Machine Tool Industry, Selected Years

Quantity Used

Material	Unit of Measure	Metal Cutting Industry			Metal Forming Industry		
		1972	1977	1982	1972	1977	1982
MILL SHAPES							
Carbon Steel	Short Ton	85,900(i)	NA	NA	139,100(j)	113,400(a)	52,500(q)
Stainless Steel	Short Ton	900	NA	NA	500	100(m)	NA
Other Alloy Steel	Short Ton	24,500	20,000(o)	NA	9,600	12,000(n)	NA
Copper and Alloy	000 Lbs.	600(h,k)	3,800(d,h)	NA	300(k)	800(k)	NA
Aluminum and Alloy	000 Lbs.	1,400(b)	NA	NA	NA	1,100	NA
Iron and Steel Scrap	Short Ton	20,100	6,500	NA	D	NA	D
CASTINGS (Rough and Semifinished)							
Iron (Gray & Malleable)	Short Ton	69,900	77,900(p)	7,300(r)	36,500	NA	D
Steel	Short Ton	NA	NA	D	11,100	12,400(p)	D
Aluminum and Alloy	000 Lbs.	NA	NA	D	700	2,600(p)	0
Copper and Alloy	000 Lbs.	1,100	1,700(p)	0	2,600	NA	0
IRON AND STEEL FORGINGS							
Iron & Steel Forgings	Short Ton	4,700	5,900(p)	NA	7,500	8,200(p)	NA
ELECTRIC MOTORS AND GENERATORS							
Fractional	Number	96,300(c)	1,900(l,p)	D	900(1)	1,900(1,p)	0
Integral	Number	NA	NA	900(r)	NA	NA	D

NA - Not Available. D - Withheld to avoid disclosure.

(a) Excludes structural shapes and all other carbon steel.
(b) Sheet and extrusion only.
(c) Excludes timing motors.
(d) Insulated wire and cable only.
(e) Excludes wire and wire products and sheet and strip.
(f) Excludes plate, sheet and strip and pipe and tube.
(g) Sheet and plate only.
(h) Bare wire only.
(i) Bars and bar shapes, sheet and strip, and plates only.
(j) Bars and bar shapes, sheet and strip, plates, and structural shapes only.
(k) Rod, bar, and mechanical wire and plate, sheet, and strip only.
(l) Timing motors only.
(m) Sheet and strip only.
(n) Excludes bars and bar shapes.
(o) Bars and bar shapes only.
(p) Purchased only.
(q) Plates only.
(r) Produced & Consumed only, no Purchases.

Source: U.S. Bureau of the Census, "Census of Manufactures, 1982, 1977, 1972: Industry Series: Metalworking Machinery and Equipment." See chapter introduction.

SELECTED MATERIALS CONSUMED
By the Machine Tool Industry, Selected Years
(Millions of Dollars)

	Metal Cutting Industry			Metal Forming Industry		
Material	1972	1977	1982	1972	1977	1982
GRAND TOTAL	$ 454.3	$ 904.4	$1,380.0	$ 253.4	$ 395.7	$512.8
MILL SHAPES						
Carbon Steel	34.4	63.1	69.6	36.7	58.3	58.0
Stainless Steel	3.2	3.0	1.6	.6	.7	.8
Other Alloy Steel	15.5	23.2	18.8	7.0	12.1	7.5
Copper and Alloy	3.5	5.5	8.2	1.1(a)	2.4(c)	19.0
Aluminum and Alloy	1.4	1.7	3.4	0.8	2.7	.5(b)
Iron and Steel Scrap	.9	1.1	2.3	D	.7	.3
CASTINGS (Rough and Semifinished)						
Iron (Gray and Malleable)	43.6	84.5	88.0	18.1	29.4	27.0
Steel	4.4	8.7	54.6	8.9	18.8	16.6
Aluminum and Alloy	4.1	6.0	3.0	.8	2.9	2.4
Copper and Alloy	1.2	2.5	1.2	2.9	1.5	2.9
IRON AND STEEL FORGINGS						
Iron and Steel Forgings	4.3	8.7	15.4	6.1	11.3	13.8
ELECTRICAL MOTORS AND GENERATORS						
Fractional	4.3	7.0	26.8	.6	2.7	5.1
Integral	16.3	26.3	35.1	6.6	12.6	6.7
BEARINGS						
Ball and Roller	13.2	18.6	25.9	3.7	7.6	9.5
ALL OTHER MATERIALS						
Components, Parts, Etc.	227.0	478.6	753.6	114.7	151.7	174.3
NO BREAKDOWN FURNISHED						
Materials, Parts, Containers and Supplies	77.0	165.9	272.5	44.8	80.3	166.9

D - Withheld to avoid disclosure.

(a) Excludes bare wire, pipe and tube.
(b) Sheet, plate and foil only.
(c) Excludes plate, sheet and strip.

Source: U.S. Bureau of the Census "Census of Manufactures, 1982, 1977, 1972: Industry Series: Metalworking Machinery and Equipment," and earlier issues. See chapter introduction.

4

U. S. MACHINE TOOL SHIPMENTS AND ORDERS

This chapter deals with machine tool products shipped by the machine tool industry and other industries.

Up and Down Performance

The machine tool business is highly cyclical, a fact evidenced by historical patterns of new orders, shipments and order backlogs. The dramatic ups and downs in the value of shipments and orders tend to obscure significant changes in the "product mix;" the share of the total comprised by the different major machine tool product categories.

One of the more notable of these changes is the increased share of "other machines" in metal cutting machine tool shipments. This category's share of output has risen from 15-20% in the late 1950's and early 1960's to more than twice that level in recent years. The reason for this dramatic rise is that this group includes station type machines and multi-function NC machines (machining centers). As such, its increased market share demonstrates parallel yet divergent trends ongoing in American metalworking.

Station type machines are highly specialized, dedicated machines, designed to produce one part in volumes of up to hundreds of thousands per year. They are the model of efficiency through the use of dedicated mass production. Machining centers, on the other hand, represent efficiency through flexibility. By virtue of their tool changing capability and their numerical control - in which a part-making program maintains the production process rather than manual control - these machines can be easily reprogrammed to produce a variety of parts.

These are only two examples of how machine tool technology and America's machine tool builders have responded to the changing metalworking needs of America's manufacturers.

Data Sources

Census and Annual Survey of Manufactures

The broadest coverage of machine tool shipment data is provided by the Census of Manufactures and the Annual Surveys of Manufactures. Included in these reports are statistics for: most of the major categories of metal cutting machine tools (boring, drilling, gear cutting, presses, etc.), machine tools primarily designed for home workshops and laboratories, parts sold separately, and machine tools originating primarily from small-sized plants-not specified by kind. Broad coverage is given to both metal cutting and metal forming machine tools in these reports.

The comprehensive Census of Manufactures is taken every five years (those ending in 2 and 7) and the Annual Survey of Manufactures is published in non-Census years. The charts and tables in this chapter were updated with published revised reports from the 1982 Census of Manufactures.

There are two other sources of machine tool shipment data widely used by students of the industry. One is the monthly order and shipment series published by NMTBA. The other is the quarterly "Current Industrial Report, Metalworking Machinery" (MQ35W), published by the U.S. Department of Commerce. The MQ-35W provides more detailed coverage of shipments by product types than either the Census or Survey of Manufactures. Both the MQ-35W and the NMTBA estimates are more timely and are published more frequently than the Census or Annual Survey.

NMTBA Estimate of Orders and Shipments

The NMTBA "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments, and Backlog" is published monthly, normally three or four weeks after the end of the month reported. This report differs from the broader Census report in that it is limited to complete machine tools and excludes the value of: (a) machine tools costing under $2,500, (b) machine tools designed for home workshops, etc., (c) rebuilt machines and (d) parts sold separately.

Machine tool manufacturers representing more than two-thirds of total U.S. machine tool shipments participate in the NMTBA survey. The figures received each month from respondents are expanded, based on "benchmark" totals derived from the MQ-35W reports, to an estimate of the industry total by NMTBA's Statistical Department.

The MQ-35W Report

The "Current Industrial Report, Metalworking Machinery" (MQ-35W) is published quarterly, usually about three months after the end of the quarter reported, by the Bureau of the Census.

The report covers the number and value of total machine tools shipped, by 5- and 7-digit SIC categories, for more than 120 different machine tool products. It does not report new orders but does report unfilled orders.

The report is limited to information on complete new machine tools, excluding data for small machine tools designed for home use, etc., and data for rebuilt machines. It lists separately machines with a value of $2,500 and over, and those with a value under $2,500. The MQ-35W figures, excluding machine tools with an average value under $2,500, form the benchmark used for the NMTBA "Industry Estimate."

The MQ-35W report also provides data on numerically controlled machine tools and on manufacturers' exports. It is intended to cover all manufacturers of machine tool products, including those who produce machine tools for their own use but not for sale in the marketplace, and thus to cover all shipments.

SHIPMENTS

Metal Cutting and Metal Forming Machine Tools, 1956 to Date

(Millions of Dollars)

	TOTAL			Metal Cutting			Metal Forming		
Year	Total	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign
1956	$1,377	$1,270	$107	$ 945	$ 858	$ 87	$ 432	$412	$ 20
1957	1,243	1,110	133	900	803	97	343	307	36
1958	591	507	84	438	381	57	153	126	27
1959	616	538	78	441	390	51	175	148	27
1960	744	580	164	541	420	121	203	160	43
1961	751	522	229	541	366	175	210	156	54
1962	821	606	215	613	450	163	208	156	52
1963	896	741	155	639	526	113	257	215	42
1964	1,164	959	205	845	679	166	319	280	39
1965	1,426	1,249	177	1,023	886	137	403	363	40
1966	1,685	1,535	150	1,222	1,098	124	463	437	26
1967	1,806	1,618	188	1,353	1,211	142	453	407	46
1968	1,727	1,563	164	1,358	1,238	120	369	325	44
1969	1,597	1,446	151	1,192	1,077	115	405	369	36
1970	1,443	1,239	204	993	827	166	450	412	38
1971	998	840	158	672	554	118	326	286	40
1972	1,019	894	124	714	627	87	304	267	37
1973	1,501	1,323	178	1,074	935	139	427	388	39
1974	2,031	1,763	267	1,445	1,241	205	585	522	63
1975	2,452	2,033	419	1,879	1,548	331	573	484	89
1976	2,060	1,744	316	1,482	1,270	212	578	474	104
1977	2,281	2,030	251	1,651	1,470	181	630	560	70
1978	3,013	2,689	325	2,189	1,960	228	825	729	96
1979	3,877	3,465	411	2,930	2,605	325	947	860	87
1980	4,692	4,084	608	3,681	3,206	475	1,011	878	133
1981	5,096	4,377	719	4,105	3,553	552	991	824	167
1982	3,604	3,198	406	2,895	2,599	296	710	600	110
1983	1,845	1,630	215	1,372	1,200	172	474	430	43
1984	2,286	2,093	193	1,607	1,484	123	679	609	71
1985	2,545	2,291	254	1,742	1,549	194	803	743	60

Individual items may not add to totals due to rounding.

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

NET NEW ORDERS

Metal Cutting and Metal Forming Machine Tools, 1956 to Date

(Millions of Dollars)

	TOTAL			Metal Cutting			Metal Forming		
Year	Total	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign
1956	$1,298	$1,172	$126	$ 983	$ 682	$101	$ 315	$290	$ 25
1957	722	644	78	552	491	61	170	153	17
1958	427	350	77	299	247	52	128	103	25
1959	748	644	104	541	471	70	207	173	34
1960	744	527	217	535	375	160	209	152	57
1961	772	536	236	591	401	190	181	135	46
1962	815	661	154	571	468	103	244	193	51
1963	1,061	869	192	760	607	153	301	262	39
1964	1,577	1,348	229	1,038	861	177	539	487	52
1965	1,692	1,532	160	1,251	1,122	129	441	410	31
1966	2,074	1,884	190	1,629	1,483	146	445	401	44
1967	1,420	1,272	148	1,134	1,024	110	286	248	38
1968	1,474	1,320	154	1,080	960	120	394	360	34
1969	1,728	1,517	211	1,195	1,033	162	533	484	49
1970	912	733	179	651	507	144	261	226	35
1971	861	747	114	609	524	85	252	223	29
1972	1,412	1,245	167	1,009	877	132	403	368	35
1973	2,613	2,268	345	1,825	1,550	275	787	717	70
1974	2,583	2,185	398	2,017	1,716	301	566	470	96
1975	1,277	1,064	213	916	781	[illegible]	361	284	77
1976	2,203	1,961	242	1,662	1,477	185	541	485	56
1977	2,995	2,709	286	2,202	1,981	221	793	729	64
1978	4,349	3,944	405	3,375	3,043	332	973	901	72
1979	5,621	4,856	765	4,495	3,866	629	1,126	991	135
1980	4,754	4,239	515	3,885	3,496	389	870	744	126
1981	2,945	2,563	382	2,228	1,946	282	717	617	100
1982	1,498	1,261	236	1,064	890	175	433	372	62
1983	1,696	1,558	138	1,152	1,069	82	545	489	56
1984	2,916	2,631	285	1,916	1,700	216	1,000	932	69
1985	2,528	2,262	266	1,853	1,652	201	675	610	65

Individual items may not add to totals due to rounding.

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

GROSS NEW ORDERS, CANCELLATIONS, AND NET NEW ORDERS

Metal Cutting and Metal Forming Machine Tools, 1959 to Date

(Millions of Dollars)

	TOTAL			Metal Cutting			Metal Forming		
Year	Gross New Orders	Cancel-lations	Net New Orders	Gross New Orders	Cancel-lations	Net New Orders	Gross New Orders	Cancel-lations	Net New Orders
1959	$ 769	$ 21	$ 748	$ 559	$ 18	$ 541	$ 210	$ 3	$ 207
1960	790	46	744	571	36	535	219	10	209
1961	808	36	772	621	30	591	187	6	181
1962	852	37	815	603	32	571	249	5	244
1963	1,099	38	1,061	790	30	760	309	8	301
1964	1,652	75	1,577	1,084	46	1,038	568	29	539
1965	1,771	79	1,692	1,312	61	1,251	459	18	441
1966	2,217	143	2,074	1,737	108	1,629	480	35	445
1967	1,614	194	1,420	1,292	158	1,134	322	36	286
1968	1,631	157	1,474	1,216	136	1,080	415	21	394
1969	1,910	182	1,728	1,332	137	1,195	578	45	533
1970	1,060	148	912	757	106	651	303	42	261
1971	933	72	861	655	46	609	278	25	252
1972	1,465	53	1,412	1,051	42	1,009	414	11	403
1973	2,773	160	2,613	1,958	132	1,825	815	28	787
1974	2,970	387	2,583	2,283	266	2,017	687	121	566
1975	1,651	374	1,277	1,198	282	916	453	92	361
1976	2,370	167	2,203	1,793	131	1,662	578	37	541
1977	3,153	158	2,995	2,329	127	2,202	824	31	793
1978	4,573	224	4,349	3,559	184	3,375	1,013	40	973
1979	6,063	442	5,621	4,873	378	4,495	1,190	64	1,126
1980	5,381	627	4,754	4,436	551	3,885	946	76	870
1981	3,585	640	2,945	2,799	571	2,228	786	69	717
1982	1,934	437	1,498	1,467	402	1,064	468	34	433
1983	1,890	194	1,696	1,328	177	1,152	561	17	545
1984	3,044	128	2,916	2,005	90	1,916	1,038	38	1,000
1985	2,716	188	2,528	1,983	130	1,853	733	58	675

Individual items may not add to totals due to rounding.

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments, and Backlog" (monthly).

UNFILLED ORDERS

Metal Cutting and Metal Forming Machine Tools, 1960 to Date

(Millions of Dollars)

As of December 31	Total	Metal Cutting	Metal Forming	As of December 31	Total	Metal Cutting	Metal Forming
1960	$ 444	$ 344	$100	1973	$2,074	$1,454	$621
1961	467	394	73	1974	2,625	2,025	600
1962	463	354	100	1975	1,450	1,062	388
1963	628	475	153	1976	1,594	1,243	351
1964	1,043	669	374	1977	2,308	1,794	515
1965	1,311	899	412	1978	3,643	2,981	663
1966	1,701	1,307	394	1979	5,388	4,546	843
1967	1,317	1,089	228	1980	5,451	4,750	701
1968	1,064	810	412	1981	3,300	2,873	427
1969	1,195	812	394	1982	1,194	1,043	151
1970	706	471	228	1983	1,045	823	222
1971	569	408	162	1984	1,675	1,132	542
1972	963	702	621	1985	1,658	1,243	414

Individual items may not add to totals due to rounding.

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

METAL CUTTING GROSS NEW ORDERS, CANCELLATIONS, AND NET NEW ORDERS

Domestic & Foreign, 1956 to Date

(Millions of Dollars)

	TOTAL			Domestic			Foreign		
Year	Gross New Orders	Cancel-lations	Net New Orders	Gross New Orders	Cancel-lations	Net New Orders	Gross New Orders	Cancel-lations	Net New Orders
1956	$1,052	$ 69	$ 983	$ 946	$ 64	$ 882	$ 106	$ 5	$101
1957	618	66	552	555	64	491	63	2	61
1958	317	18	299	265	18	247	52	0	52
1959	559	18	541	486	15	471	73	3	70
1960	571	36	535	408	33	375	163	3	160
1961	621	30	591	425	24	401	196	6	190
1962	603	32	571	494	26	468	109	6	103
1963	790	30	760	632	25	607	158	5	153
1964	1,084	46	1,038	896	35	861	188	11	177
1965	1,312	61	1,251	1,175	53	1,122	137	8	129
1966	1,737	108	1,629	1,580	97	1,483	157	11	146
1967	1,292	158	1,134	1,173	149	1,024	119	9	110
1968	1,216	136	1,080	1,091	131	960	125	5	120
1969	1,332	137	1,195	1,160	127	1,033	172	10	162
1970	757	106	651	605	99	506	152	7	145
1971	655	46	609	565	41	524	90	5	85
1972	1,051	42	1,009	916	39	877	135	3	132
1973	1,953	132	1,825	1,675	124	1,550	283	8	275
1974	2,283	266	2,017	1,959	243	1,716	324	23	301
1975	1,198	282	916	1,027	247	780	171	35	136
1976	1,793	131	1,662	1,594	117	1,477	199	14	185
1977	2,329	127	2,202	2,095	114	1,981	234	13	221
1978	3,559	184	3,375	3,203	160	3,043	356	24	332
1979	4,873	378	4,495	4,202	337	3,866	671	42	629
1980	4,436	551	3,885	3,986	490	3,496	450	61	389
1981	2,799	571	2,228	2,476	530	1,946	323	41	282
1982	1,467	402	1,064	1,262	373	890	204	30	175
1983	1,328	177	1,152	1,236	167	1,069	92	10	82
1984	2,005	90	1,916	1,780	80	1,700	226	9	216
1985	1,983	130	1,853	1,769	117	1,652	213	13	201

Individual items may not add to totals due to rounding.

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

METAL FORMING GROSS NEW ORDERS, CANCELLATIONS, AND NET NEW ORDERS

Domestic & Foreign, 1956 to Date

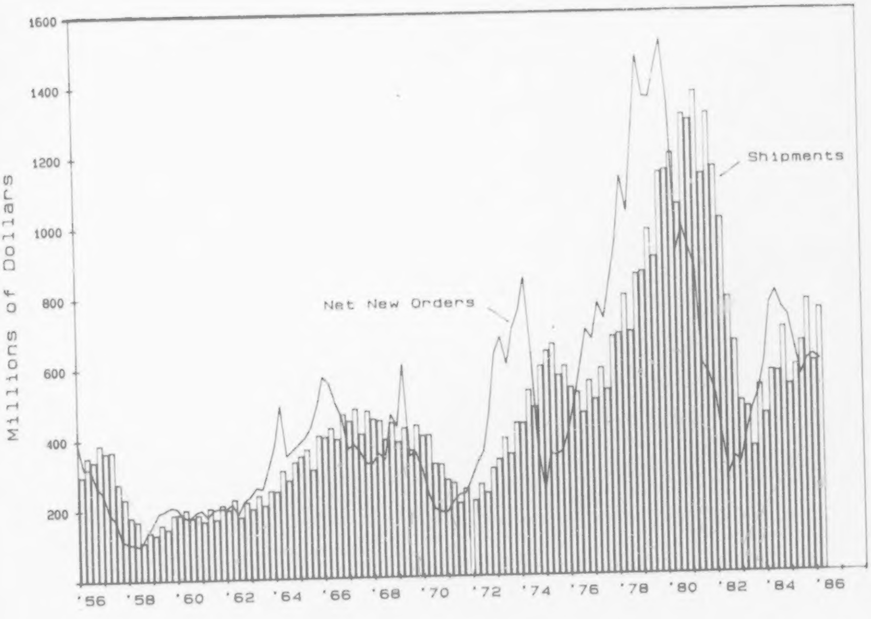
(Millions of Dollars)

	TOTAL			Domestic			Foreign		
Year	Gross New Orders	Cancel-lations	Net New Orders	Gross New Orders	Cancel-lations	Net New Orders	Gross New Orders	Cancel-lations	Net New Orders
1956	$ 340	$ 25	$ 315	$ 314	$ 24	$290	$ 26	$ 1	$ 25
1957	181	11	170	164	11	153	17	0	17
1958	134	6	128	108	5	103	26	1	25
1959	210	3	207	175	2	173	35	1	34
1960	219	10	209	161	9	152	58	1	57
1961	187	6	181	139	4	135	48	2	46
1962	249	5	244	197	4	193	52	1	51
1963	309	8	301	269	7	262	40	1	39
1964	568	29	539	511	24	487	57	5	52
1965	459	18	441	427	17	410	32	1	31
1966	480	35	445	434	33	401	46	2	44
1967	322	36	286	281	33	248	41	3	38
1968	415	21	394	380	20	360	35	1	34
1969	578	45	533	527	43	484	51	2	49
1970	303	42	261	265	38	227	38	4	34
1971	278	25	252	244	21	223	34	4	29
1972	414	11	403	378	10	368	36	1	35
1973	815	28	787	742	25	717	73	3	70
1974	687	121	566	583	113	470	105	8	96
1975	453	92	361	364	81	284	89	12	77
1976	578	37	541	513	28	485	64	8	56
1977	824	31	793	757	29	729	67	2	64
1978	1,013	40	973	938	37	901	75	3	72
1979	1,190	64	1,126	1,048	57	991	142	7	136
1980	946	76	870	814	70	744	132	6	126
1981	786	69	717	680	63	617	106	6	100
1982	468	34	433	399	28	372	68	7	62
1983	561	17	545	503	14	489	58	2	56
1984	1,038	38	1,000	967	36	932	71	3	69
1985	733	58	675	664	54	610	69	4	65

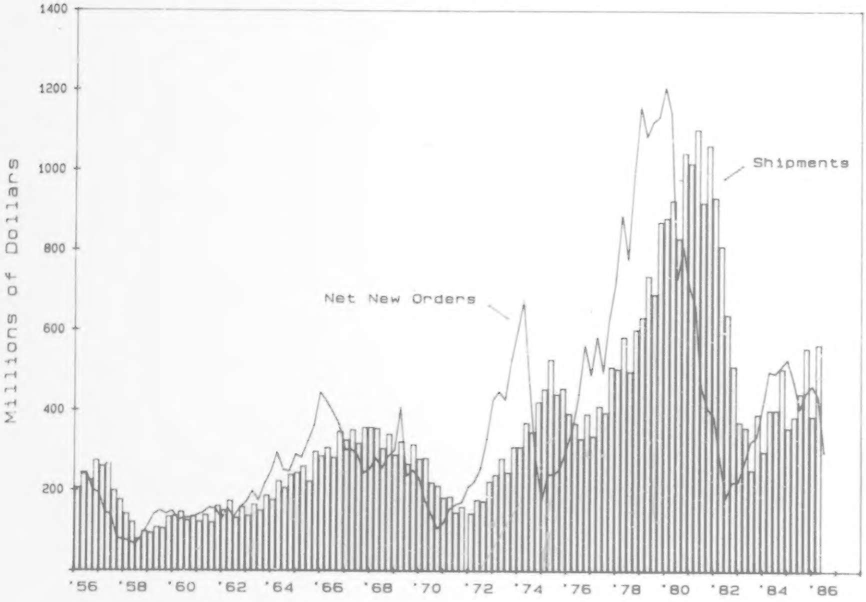
Individual items may not add to totals due to rounding.

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

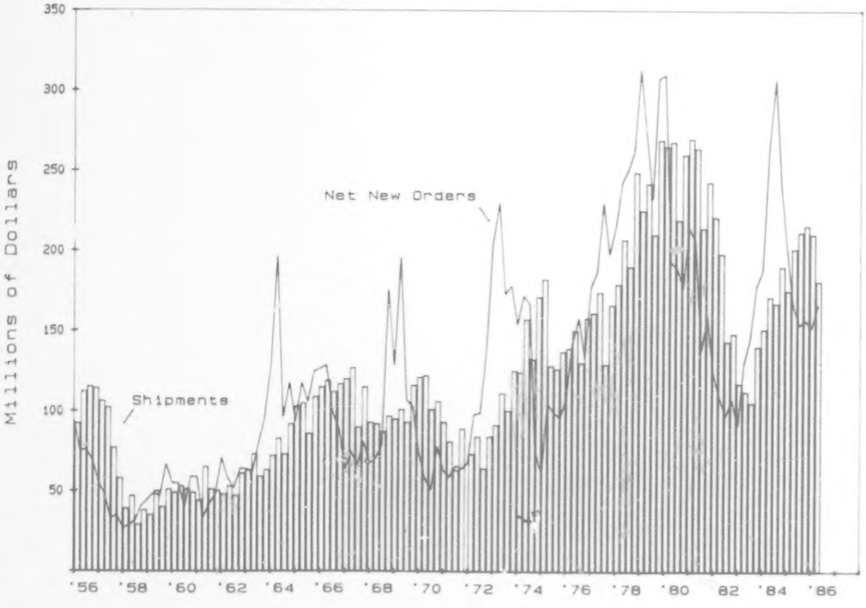
Total Machine Tools
Shipments (Bar) and Net New Orders (Line)
Quarterly, 1956:1 to 1986:2



Metal Cutting Machine Tools
Shipments (Bar) and Net New Orders (Line)
Quarterly, 1956: 1 to 1986: 2



Metal Forming Machine Tools
Shipments (Bar) and Net New Orders (Line)
Quarterly, 1956: 1 to 1986: 2



SHIPMENTS OF MACHINE TOOLS

Quarterly and Yearly, 1956-1963

(Thousands of Dollars)

Period	TOTAL		Metal Cutting		Metal Forming	
	Domestic	Foreign	Domestic	Foreign	Domestic	Foriegn
1956-1 qtr.	$ 274,100	$ 23,750	$187,700	$ 18,550	$ 86,400	$ 5,200
2	326,100	25,600	218,700	21,150	107,400	4,450
3	319,200	21,100	208,100	17,350	111,100	3,750
4	350,900	36,550	243,700	29,950	107,200	6,600
Total	$1,270,300	$107,000	$858,200	$ 87,000	$412,100	$20,000
1957-1 qtr.	$ 331,900	$ 33,350	$232,950	$ 26,650	$ 98,950	$ 6,700
2	325,700	41,900	236,150	29,650	89,550	12,250
3	248,050	28,350	179,300	19,800	68,750	8,550
4	204,700	28,750	155,150	20,500	49,550	8,250
Total	$1,110,350	$132,350	$803,550	$ 96,600	$306,800	$35,750
1958-1 qtr.	$ 160,050	$ 19,900	$125,500	$ 15,400	$ 34,550	$ 4,500
2	141,800	25,700	105,050	15,750	36,750	9,950
3	90,300	17,450	65,400	13,050	24,900	4,400
4	115,000	21,000	85,150	13,100	29,850	7,900
Total	$ 507,150	$ 84,050	$381,100	$ 57,300	$126,050	$26,750
1959-1 qtr.	$ 108,200	$ 20,750	$ 79,300	$ 14,900	$ 28,900	$ 5,850
2	137,450	19,550	95,450	12,050	42,000	7,500
3	130,650	14,400	95,050	10,000	35,600	4,400
4	162,000	23,000	120,050	13,800	41,950	9,200
Total	$ 538,300	$ 77,700	$389,850	$ 50,750	$148,450	$26,950
1960-1 qtr.	$ 159,550	$ 25,950	$117,700	$ 18,700	$ 41,850	$ 7,250
2	160,400	38,500	116,950	28,750	43,450	9,750
3	136,950	38,650	96,350	28,450	40,600	10,200
4	123,950	60,050	89,750	44,850	34,200	15,200
Total	$ 580,850	$163,150	$420,750	$120,750	$160,100	$42,400
1961-1 qtr.	$ 116,150	$ 50,100	$ 83,650	$ 38,550	$ 32,500	$11,550
2	146,450	56,650	95,900	42,550	50,550	14,100
3	117,200	53,750	80,250	39,800	36,950	13,950
4	142,850	67,750	106,750	53,800	36,100	13,950
Total	$ 522,650	$228,250	$366,550	$174,700	$156,100	$53,550
1962-1 qtr.	$ 140,250	$ 57,700	$106,100	$ 43,900	$ 34,150	$13,800
2	159,750	66,950	121,150	53,050	38,600	13,900
3	136,200	41,250	98,400	32,400	37,800	8,850
4	169,850	49,300	124,400	33,450	45,450	15,850
Total	$ 606,050	$215,200	$450,050	$162,800	$156,000	$52,400
1963-1 qtr.	$ 163,100	$ 36,850	$112,600	$ 24,650	$ 50,500	$12,200
2	203,300	33,500	140,550	23,600	62,750	9,900
3	173,000	36,150	122,450	27,450	50,550	8,700
4	201,850	48,000	150,450	36,700	51,400	11,300
Total	$ 741,250	$154,500	$526,050	$112,400	$215,200	$42,100

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

SHIPMENTS OF MACHINE TOOLS

Quarterly and Yearly, 1964-1971

(Thousands of Dollars)

	TOTAL		Metal Cutting		Metal Forming	
Period	Domestic	Foreign	Domestic	Foreign	Domestic	Foriegn
1964-1 qtr.	$ 197,250	$ 50,700	$ 135,900	$ 40,550	$ 61,350	$10,150
2	259,800	46,700	183,550	39,850	76,250	6,850
3	231,200	47,950	170,400	35,700	60,800	12,250
4	271,500	59,250	189,300	49,400	82,200	9,850
Total	$ 959,750	$204,600	$ 679,150	$165,500	$280,600	$39,100
1965-1 qtr.	$ 304,100	$ 42,600	$ 209,850	$ 34,150	$ 94,250	$ 8,450
2	319,850	45,700	225,200	35,100	94,650	10,600
3	271,300	36,700	193,700	27,850	77,600	8,850
4	353,550	51,800	257,100	39,600	96,450	12,200
Total	$1,248,800	$176,800	$ 885,850	$136,700	$362,950	$40,100
1966-1 qtr.	$ 361,650	$ 39,000	$ 253,900	$ 31,350	$107,750	$ 7,650
2	389,700	36,150	277,200	30,150	112,500	6,000
3	361,950	32,300	256,800	25,150	105,150	7,150
4	421,050	43,400	309,600	37,600	111,450	5,800
Total	$1,534,350	$150,850	$1,097,500	$124,250	$436,850	$26,600
1967-1 qtr.	$ 399,500	$ 41,050	$ 289,750	$ 35,900	$109,750	$10,000
2	428,850	50,750	315,450	36,250	113,400	14,050
3	367,350	45,900	287,200	30,800	80,150	10,250
4	422,250	50,300	318,650	39,200	103,600	11,550
Total	$1,617,950	$188,000	$1,211,050	$142,150	$406,900	$45,850
1968-1 qtr.	$ 402,200	$48,250	$ 321,500	$ 36,000	$ 80,700	$12,250
2	392,800	53,550	313,850	40,950	78,950	12,600
3	361,750	29,550	282,900	21,650	78,850	7,900
4	406,000	32,800	320,050	21,400	85,950	11,400
Total	$1,562,750	$164,150	$1,238,300	$120,000	$324,450	$44,150
1969-1 qtr.	$ 353,500	$ 30,600	$ 268,100	$ 21,350	$ 85,400	$ 9,250
2	384,300	38,450	293,250	28,500	91,050	9,950
3	321,950	37,800	234,850	31,450	87,100	6,350
4	387,000	43,950	281,250	33,700	105,750	10,250
Total	$1,446,750	$150,800	$1,077,450	$115,000	$369,300	$35,800
1970-1 qtr.	$ 351,950	$ 48,700	$ 241,500	$ 37,900	$110,450	$10,800
2	348,000	54,800	236,200	44,550	111,800	10,250
3	269,350	51,600	176,050	44,350	93,300	7,250
4	269,650	49,000	173,600	38,750	96,050	10,250
Total	$1,238,950	$204,100	$ 827,350	$165,550	$411,600	$38,550
1971-1 qtr.	$ 228,500	$ 46,300	$ 142,900	$39,000	$ 85,600	$ 7,300
2	228,350	37,900	154,200	30,850	74,150	7,050
3	173,000	35,100	120,300	24,800	52,700	10,300
4	209,950	38,800	136,800	23,450	73,150	15,350
Total	$ 839,800	$158,100	$ 554,200	$118,100	$285,600	$40,000

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

SHIPMENTS OF MACHINE TOOLS

Quarterly and Yearly, 1972-1979

(Thousands of Dollars)

	TOTAL		Metal Cutting		Metal Forming	
Period	Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
1972-1 qtr.	$ 183,750	$ 31,550	$ 121,900	$ 20,850	$ 61,850	$10,700
2	229,550	31,050	155,650	21,100	73,900	9,950
3	209,300	27,050	151,300	21,200	58,000	5,850
4	271,750	34,700	198,300	24,150	73,450	10,550
Total	$ 894,350	$124,350	$ 627,150	$ 87,300	$267,200	$37,050
1973-1 qtr.	$ 295,050	$ 35,500	$ 209,950	$ 29,400	$ 85,100	$ 6,100
2	347,500	43,200	243,750	36,050	103,750	7,150
3	296,650	48,950	207,450	37,850	89,200	11,100
4	383,900	50,250	273,900	35,400	110,000	14,850
Total	$1,323,100	$177,900	$ 935,050	$138,700	$388,050	$39,200
1974-1 qtr.	$ 378,550	$ 54,750	$ 269,850	$ 39,400	$108,700	$15,350
2	464,250	61,350	323,800	44,850	140,450	16,500
3	408,800	69,350	291,000	54,700	117,800	14,650
4	511,550	81,950	356,700	65,550	154,850	16,400
Total	$1,763,150	$267,400	$1,241,350	$204,500	$521,800	$62,900
1975-1 qtr.	$ 526,550	$109,700	$ 375,400	$ 78,400	$151,150	$31,300
2	554,750	101,400	443,450	84,550	111,300	16,850
3	467,150	99,650	361,850	79,050	105,300	20,600
4	484,150	108,350	367,400	88,550	116,750	19,800
Total	$2,032,600	$419,100	$1,548,100	$330,550	$484,500	$88,550
1976-1 qtr.	$ 446,550	$ 85,300	$ 334,150	$ 58,500	$112,400	$26,800
2	425,400	92,450	302,100	65,750	123,300	26,700
3	393,450	66,900	284,850	45,100	108,600	21,800
4	477,950	71,650	348,750	42,900	129,200	28,750
Total	$1,743,350	$316,300	$1,269,850	$212,250	$473,500	$104,050
1977-1 qtr.	$ 433,800	$ 63,100	$ 297,550	$ 38,550	$ 136,250	$ 24,550
2	526,300	58,400	365,650	45,150	160,650	13,250
3	476,000	48,050	359,300	35,850	116,700	12,200
4	594,100	81,000	447,350	61,400	146,750	19,600
Total	$2,030,200	$250,550	$1,469,850	$180,950	$560,350	$ 69,600
1978-1 qtr.	$ 620,900	$ 62,300	$ 459,650	$ 44,200	$161,250	$ 18,100
2	712,550	79,050	526,950	57,250	185,600	21,800
3	609,800	77,750	438,850	59,200	170,950	18,550
4	745,350	105,750	534,650	67,750	210,700	38,000
Total	$2,688,600	$324,850	$1,960,100	$228,400	$728,500	$ 96,450
1979-1 qtr.	$ 769,750	$ 88,300	$ 564,450	$ 69,000	$205,300	$ 19,300
2	869,050	109,150	648,100	87,650	220,950	21,500
3	802,800	97,050	611,350	78,500	191,450	18,550
4	1,023,700	116,750	781,600	89,400	242,100	27,350
Total	$3,465,300	$411,250	$2,605,500	$324,550	$859,800	$ 86,700

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

SHIPMENTS OF MACHINE TOOLS
Quarterly and Yearly, 1980 to Date
(Thousands of Dollars)

	TOTAL		Metal Cutting		Metal Forming	
Period	Domestic	Foreign	Domestic	Foreign	Domestic	Foriegn
1980-1 qtr.	$1,030,450	$115,700	$ 794,650	$ 86,750	$235,800	$ 28,950
2	1,037,750	155,550	802,500	122,850	235,250	32,700
3	915,200	133,850	727,800	102,650	187,400	31,200
4	1,100,850	202,400	881,050	162,550	219,800	39,850
Total	$4,084,250	$607,500	$3,206,000	$474,800	$878,250	$132,700
1981-1 qtr.	$1,077,400	$210,800	$ 862,250	$155,600	$215,150	$ 55,200
2	1,131,150	236,350	917,950	185,450	213,200	50,900
3	1,006,000	127,950	820,350	99,950	185,650	28,000
4	1,162,100	143,850	951,900	111,050	210,200	32,800
Total	$4,376,650	$718,950	$3,552,450	$552,050	$824,200	$166,900
1982-1 qtr.	$1,041,550	$112,650	$ 861,300	$ 71,750	$180,250	$ 40,900
2	911,850	96,600	735,300	75,350	176,550	21,250
3	676,200	107,200	550,700	89,750	125,500	17,450
4	568,750	89,600	451,300	59,300	117,450	30,300
Total	$3,198,350	$406,050	$2,598,600	$296,150	$599,750	$109,900
1983-1 qtr.	$ 430,800	$ 56,650	$ 329,800	$ 40,800	$101,000	$ 15,850
2	411,350	58,300	308,200	49,300	103,150	9,000
3	314,150	42,900	220,150	32,200	94,000	10,700
4	473,750	57,150	341,450	49,600	132,300	7,550
Total	$1,630,050	$215,000	$1,199,600	$171,900	$430,450	$ 43,100
1984-1 qtr.	$ 408,950	$ 40,550	$ 273,000	$ 25,100	$135,950	$ 15,450
2	521,600	50,700	373,550	28,250	148,050	22,450
3	527,000	41,850	377,250	24,300	149,750	17,550
4	635,050	60,150	460,050	45,000	175,000	15,150
Total	$2,092,600	$193,250	$1,483,850	$122,650	$608,750	$ 70,600
1985-1 qtr.	$ 482,750	$ 48,950	$ 319,900	$ 37,150	$162,850	$ 11,800
2	548,350	37,700	357,550	27,450	190,800	10,250
3	596,400	58,250	407,100	35,950	189,300	22,300
4	663,950	108,850	463,950	93,200	200,000	15,650
Total	$2,291,450	$253,750	$1,548,500	$193,750	$742,950	$ 60,000

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipment and Backlog" (monthly).

NET NEW ORDERS FOR MACHINE TOOLS

Quarterly and Yearly, 1956-1963

(Thousands of Dollars)

	TOTAL		Metal Cutting		Metal Forming	
Period	Domestic	Foreign	Domestic	Foreign	Domestic	Foriegn
1956-1 qtr.	$ 353,700	$ 39,050	$265,200	$ 33,200	$ 88,500	$ 5,850
2	291,700	26,300	222,550	20,300	69,150	6,000
3	284,150	34,800	215,400	27,150	68,750	7,650
4	242,700	26,450	179,050	20,650	63,650	5,800
Total	$1,172,250	$126,600	$882,200	$101,300	$290,050	$25,300
1957-1 qtr.	$ 221,300	$ 25,500	$168,850	$ 22,950	$ 52,450	$ 2,550
2	176,600	16,300	131,650	12,900	44,950	3,400
3	152,450	17,300	123,450	13,700	29,000	3,600
4	95,150	19,150	68,000	11,650	27,150	7,500
Total	$ 645,500	$ 78,250	$491,950	$ 61,200	$153,550	$17,050
1958-1 qtr.	$ 86,000	$ 17,600	$ 61,750	$ 14,400	$ 24,250	$ 3,200
2	78,300	22,650	57,050	15,150	21,250	7,500
3	79,800	15,950	55,450	8,700	24,350	7,250
4	107,200	21,250	73,700	13,300	33,500	7,950
Total	$ 351,300	$ 77,450	$247,950	$ 51,550	$103,350	$25,900
1959-1 qtr.	$ 139,100	$ 18,300	$ 97,900	$ 14,150	$ 41,200	$ 4,150
2	172,700	16,800	127,550	12,800	45,150	4,000
3	168,300	28,500	132,350	17,450	35,950	11,050
4	164,350	42,200	113,150	26,450	51,200	15,750
Total	$ 644,450	$105,800	$470,950	$ 70,850	$173,500	$34,950
1960-1 qtr.	$ 158,500	$ 44,750	$112,850	$ 35,700	$ 45,650	$ 9,050
2	124,250	55,900	85,600	39,100	38,650	16,800
3	114,950	56,550	90,200	41,150	24,750	15,400
4	129,950	60,100	86,350	44,350	43,600	15,750
Total	$ 527,650	$217,300	$375,000	$160,300	$152,650	$57,000
1961-1 qtr.	$ 140,550	$ 57,000	$ 95,150	$ 43,250	$ 45,400	$13,750
2	124,150	53,000	100,050	43,750	24,100	9,250
3	128,100	70,250	97,450	59,050	30,650	11,200
4	143,950	57,550	108,500	44,600	35,450	12,950
Total	$ 536,750	$237,800	$401,150	$190,650	$135,600	$47,150
1962-1 qtr.	$ 156,600	$ 42,300	$102,200	$ 26,200	$ 54,400	$16,100
2	167,400	45,300	123,850	30,850	43,550	14,450
3	147,950	36,400	108,850	23,550	39,100	12,850
4	190,100	30,550	133,950	22,650	56,150	7,900
Total	$ 662,050	$154,550	$468,850	$103,250	$193,200	$51,300
1963-1 qtr.	$ 196,150	$ 39,000	$140,250	$ 31,100	$ 55,900	$ 7,900
2	197,300	62,150	148,300	49,450	49,000	12,700
3	208,750	45,700	140,350	33,850	68,400	11,850
4	267,450	45,100	177,950	38,500	89,500	6,600
Total	$ 869,650	$191,950	$606,850	$152,900	$262,800	$39,050

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

NET NEW ORDERS FOR MACHINE TOOLS

Quarterly and Yearly, 1964-1971

(Thousands of Dollars)

	TOTAL		Metal Cutting		Metal Forming	
Period	Domestic	Foreign	Domestic	Foreign	Domestic	Foriegn
1964-1 qtr.	$ 312,150	$ 64,000	$ 194,200	$ 52,900	$117,950	$11,100
2	428,100	63,200	248,150	46,300	179,950	16,900
3	293,750	52,850	209,900	40,700	83,850	12,150
4	314,050	50,800	209,000	38,000	105,050	12,800
Total	$1,348,050	$230,850	$ 861,250	$177,900	$486,800	$52,950
1965-1 qtr.	$ 338,850	$ 43,150	$ 253,000	$ 35,500	$ 85,850	$ 7,650
2	365,650	33,400	255,400	26,050	110,250	7,350
3	385,050	42,800	284,500	37,250	100,550	5,550
4	443,400	41,100	329,750	30,250	113,650	10,850
Total	$1,532,950	$160,450	$1,122,650	$129,050	$410,300	$31,400
1966-1 qtr.	$ 514,200	$ 57,450	$ 398,150	$ 46,450	$116,050	$11,000
2	497,800	54,350	384,400	38,500	113,400	15,850
3	457,650	38,100	364,950	30,550	92,700	7,550
4	414,800	41,300	335,600	31,300	79,200	10,000
Total	$1,884,450	$191,200	$1,483,100	$146,800	$401,350	$44,400
1967-1 qtr.	$ 327,800	$ 37,150	$ 268,600	$ 32,350	$ 59,200	$ 4,800
2	335,600	42,500	273,550	29,100	62,050	13,400
3	319,200	35,350	262,950	25,350	56,250	10,000
4	290,200	33,800	219,550	23,500	70,650	10,300
Total	$1,272,800	$148,800	$1,024,650	$110,300	$248,150	$38,500
1968-1 qtr.	$ 287,050	$ 36,800	$ 223,700	$ 31,750	$ 63,350	$ 5,050
2	307,300	44,850	246,400	34,750	60,900	10,100
3	303,800	31,900	232,200	24,250	71,600	7,650
4	422,300	40,100	257,600	28,700	164,700	11,400
Total	$1,320,450	$153,650	$ 959,900	$119,450	$360,550	$34,200
1969-1 qtr.	$ 376,550	$ 51,450	$ 260,000	$ 40,250	$116,550	$11,200
2	557,850	46,000	372,550	35,700	185,300	10,300
3	279,300	63,700	184,950	51,100	94,350	12,600
4	303,300	50,600	215,150	35,600	88,150	15,000
Total	$1,517,000	$211,750	$1,032,650	$162,650	$484,350	$49,100
1970-1 qtr.	$ 256,650	$ 48,750	$ 191,300	$ 39,750	$ 65,350	$ 9,000
2	185,550	46,100	131,950	41,850	53,600	4,250
3	150,400	41,750	106,900	34,150	43,500	7,600
4	140,750	42,600	76,600	28,800	64,150	13,800
Total	$ 733,350	$179,200	$ 506,750	$144,550	$226,600	$34,650
1971-1 qtr	$ 151,000	$ 30,550	$ 95,500	$ 23,250	$ 55,500	$ 7,300
2	182,250	30,150	128,800	24,550	53,450	5,600
3	204,100	27,450	144,500	20,900	59,600	6,550
4	209,950	25,700	155,300	15,950	54,650	9,750
Total	$ 747,300	$113,850	$ 524,100	$ 84,650	$223,200	$29,200

Source:NMTBA,"Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

NET NEW ORDERS FOR MACHINE TOOLS

Quarterly and Yearly, 1972-1979

(Thousands of Dollars)

Period	TOTAL		Metal Cutting		Metal Forming	
	Domestic	Foreign	Domestic	Foreign	Domestic	Foriegn
1972-1 qtr.	$ 242,050	$ 33,550	$ 180,550	$ 27,100	$ 61,500	$ 6,450
2	284,750	34,900	193,800	28,350	90,950	6,550
3	301,550	51,550	210,900	42,800	90,650	8,750
4	417,100	46,550	292,000	33,450	125,100	13,100
Total	$1,245,450	$166,550	$ 877,250	$131,700	$368,200	$34,850
1973-1 qtr.	$ 558,150	$ 73,850	$ 370,150	$ 55,850	$188,000	$ 18,000
2	610,550	67,550	395,450	52,550	215,100	15,000
3	512,850	87,250	358,450	68,900	154,400	18,350
4	586,050	116,400	426,350	97,750	159,700	18,650
Total	$2,267,600	$345,050	$1,550,400	$275,050	$717,200	$ 70,000
1974-1 qtr.	$ 644,500	$107,700	$ 509,750	$ 88,100	$134,750	$ 19,600
2	737,950	109,900	592,550	83,650	145,400	26,250
3	536,300	95,200	394,100	70,900	142,200	24,300
4	266,500	85,000	219,250	58,750	47,250	26,250
Total	$2,185,250	$397,800	$1,715,650	$301,400	$469,600	$ 96,400
1975-1 qtr.	$ 188,350	$ 49,250	$ 147,700	$ 28,550	$ 40,650	$ 20,700
2	276,800	68,950	201,050	39,800	75,750	29,150
3	293,750	46,700	209,600	31,750	84,150	14,950
4	305,150	47,800	222,150	35,300	83,000	12,500
Total	$1,064,050	$212,700	$ 780,500	$135,400	$283,550	$ 77,300
1976-1 qtr.	$ 354,500	$ 58,800	$ 259,950	$ 45,800	$ 94,550	$ 13,000
2	452,700	43,900	322,700	31,350	130,000	12,550
3	527,800	68,500	383,500	55,900	144,300	13,600
4	626,450	69,550	510,450	52,500	116,000	17,050
Total	$1,961,450	$241,750	$1,476,600	$185,550	$484,850	$ 56,200
1977-1 qtr.	$ 603,900	$ 63,550	$ 443,850	$ 45,150	$160,050	$ 18,400
2	692,250	78,300	522,600	61,100	169,650	17,200
3	650,700	75,150	435,300	60,900	215,400	14,250
4	762,800	68,700	578,950	54,200	183,850	14,500
Total	$2,709,650	$285,700	$1,980,700	$221,350	$728,950	$ 64,350
1978-1 qtr.	$ 847,300	$ 92,750	$ 646,250	$ 77,600	$201,050	$ 15,150
2	1,013,250	116,700	789,550	97,000	223,700	19,700
3	953,850	73,800	720,700	56,250	233,150	17,550
4	1,129,700	121,150	886,650	101,450	243,050	19,700
Total	$3,944,100	$404,400	$3,043,150	$332,300	$900,950	$ 72,100
1979-1 qtr.	$1,322,800	$148,600	$1,031,550	$126,700	$291,250	$ 21,900
2	1,189,000	167,450	963,300	120,250	225,700	47,200
3	1,171,850	181,350	969,400	151,100	202,450	30,250
4	1,172,850	267,550	901,550	231,250	271,300	36,300
Total	$4,856,500	$764,950	$3,865,800	$629,300	$990,700	$135,650

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

NET NEW ORDERS FOR MACHINE TOOLS

Quarterly and Yearly, 1980 to Date

(Thousands of Dollars)

	TOTAL		Metal Cutting		Metal Forming	
Period	Domestic	Foreign	Domestic	Foreign	Domestic	Foriegn
1980-1 qtr.	$1,331,950	$185,500	$1,057,900	$149,900	$274,050	$ 35,600
2	1,210,050	125,300	1,054,300	87,800	155,750	37,500
3	825,350	92,150	659,050	69,250	166,300	22,900
4	872,200	111,800	724,250	82,300	147,950	29,500
Total	$4,239,550	$514,750	$3,495,500	$389,250	$744,050	$125,500
1981-1 qtr.	$ 809,950	$110,400	$ 615,250	$ 91,350	$194,700	$ 19,050
2	723,600	143,400	559,950	101,250	163,650	42,150
3	530,650	62,800	408,100	47,150	122,550	15,650
4	498,450	65,600	362,500	42,550	135,950	23,050
Total	$2,562,650	$382,200	$1,945,800	$282,300	$616,850	$ 99,900
1982-1 qtr.	$ 432,300	$ 74,500	$ 328,400	$ 56,450	$103,900	$ 18,050
2	303,050	79,600	216,450	58,300	86,600	21,300
3	237,300	42,650	154,000	29,450	83,300	13,200
4	288,700	39,650	190,750	30,650	97,950	9,000
Total	$1,261,350	$236,400	$ 889,600	$174,850	$371,750	$ 61,550
1983-1 qtr.	$ 285,550	$ 29,300	$ 205,850	$ 18,250	$ 79,700	$ 11,050
2	366,700	32,400	250,300	19,000	116,400	13,400
3	439,450	28,700	305,900	16,300	133,550	12,400
4	466,500	47,550	307,400	28,650	159,100	18,900
Total	$1,558,200	$137,950	$1,069,450	$ 82,200	$488,750	$ 55,750
1984-1 qtr.	$ 551,900	$ 48,550	$ 376,100	$ 36,650	$175,800	$ 11,900
2	654,650	109,750	410,750	88,450	243,900	21,300
3	734,950	65,250	439,150	53,850	295,800	11,400
4	689,550	61,200	473,550	37,300	216,000	23,900
Total	$2,631,050	$284,750	$1,699,550	$216,250	$931,500	$ 68,500
1985-1 qtr.	$ 663,250	$ 65,000	$ 475,500	$ 53,000	$187,650	$ 12,000
2	582,450	58,950	430,150	45,550	152,300	13,400
3	465,350	93,100	338,800	65,950	126,550	27,150
4	551,100	48,900	407,700	36,450	143,400	12,450
TOTAL	$2,262,150	$265,950	$1,652,150	$200,950	$610,000	$ 65,000

Source: NMTBA, "Industry Estimate of Machine Tool New Orders, Cancellations, Shipments and Backlog" (monthly).

SHIPMENTS OF MACHINE TOOL PRODUCTS

By Type of Machine, 1976 to Date

(Millions of Dollars)

	1976	1977	1978	1979	1980	1981	1982	1983
MACHINE TOOLS TOTAL	$3,197.4	$3,675.2	$4,735.0	$5,762.3	$6,701.5	$7,206.1	$5,538.6	$3,664.1
METAL CUTTING TOTAL	$2,146.4	$2,560.5	$3,377.1	$4,127.5	$4,952.3	$5,554.0	$4,154.7	$2,544.9
Boring Machines	80.2	93.5	133.0	169.9	200.0	227.0	198.7	103.2
Drilling Machine	(99.0)	108.9	(155.0)	167.1	188.8	155.0	67.3	36.2
Gear Cutting & Finishing Machines	61.9	67.1	111.5	104.6	124.7	132.5	87.3	40.3
Grinding & Polishing Machines (a)	243.5	288.3	359.5	464.5	553.8	623.3	515.3	331.6
Lathes	449.8	455.9	554.9	675.7	823.0	865.3	523.6	306.5
Milling Machines	146.8	167.8	204.8	259.3	(322.0)	390.4	264.5	145.4
Other Machine Tools (b)	629.8	713.6	994.8	1,279.3	1,620.8	1,838.3	1,437.4	709.7
Parts (c)	400.7	502.1	606.0	813.7	877.3	1,038.2	891.9	694.6
Not Specified by Kind	(34.7)	163.3	(s)	(193.3)	(241.8)	(284.0)	168.7	177.5
METAL FORMING TOTAL	1,051.0	1,114.7	1,357.9	1,634.8	1,749.2	1,652.1	1,383.9	1,119.2
Punching, Shearing, Bending & Forming	271.3	280.1	320.4	389.9	429.0	444.1	317.3	242.3
Presses (d)	268.1	282.6	369.1	449.5	498.5	422.7	369.2	176.5
Other (b,d)	157.0	171.7	220.3	264.4	238.9	221.4	217.0	168.9
Parts (c)	344.3	295.5	400.5	482.5	530.8	498.4	380.0	430.7
Not Specified by Kind	(10.2)	84.8	(s)	48.5	52.0	65.5	100.5	100.8

(a) Excluding Gear-Tooth Grinding, Honing, Lapping, Polishing and Buffing Machines; for 1977 - 82 honing and lapping machines are included.
(b) Including those designed primarily for Home Workshops, Laboratories, etc.
(c) Data represents parts sold separately and rebuilt machine tools.
(d) 1975 - 78 Forging Presses are included in "Presses," 1979 to date Forging Presses are included in "Other."
(s) Withheld because estimate did not meet publication standards.
( ) Indicates standard errors exceeding 15%.

This table, includes machine tool products only—those produced as "primary" products of the machine tool industry and as "secondary" products by other industries.

Sources: U.S. Bureau of the Census; "Census of Manufactures, Metal Working Machinery and Equipment" and "Annual Survey of Manufactures."

SHIPMENTS OF MACHINE TOOLS

Metal Cutting and Metal Forming, Average Value Over & Under $1,000, 1958 to 1977, Over and Under $2,500, 1978 to Date (a)

(Values in Thousands of Dollars)

	Total Shipments		Machines Valued at $1,000 or More		Machines Valued Less Than $1,000	
Year	Units	Value	Units	Value	Units	Value
1958	NA	$ 671,907	NA	NA	NA	NA
1959	196,701	679,538	65,892	$ 648,368	130,809	$ 31,170
1960	183,142	777,692	62,225	749,900	120,917	27,792
1961	170,982	764,453	57,503	737,051	113,479	27,402
1962	190,288	867,269	67,678	837,370	122,610	29,899
1963	198,571	967,133	73,255	934,485	125,316	32,648
1964	212,257	1,209,076	81,020	1,176,645	131,237	32,431
1965	250,492	1,457,685	93,350	1,418,294	157,142	39,391
1966	321,705	1,712,849	112,654	1,658,651	209,051	54,198
1967	311,472	1,869,298	117,651	1,820,197	193,821	49,101
1968	301,114	1,722,727	95,927	1,668,852	205,187	53,875
1969	308,273	1,692,188	92,148	1,631,239	216,125	60,949
1970	252,431	1,551,777	73,517	1,501,454	178,914	50,323
1971	211,432	1,057,870	51,843	1,009,389	159,589	48,481
1972	267,065	1,269,302	71,655	1,220,521	195,410	48,781
1973	307,680	1,787,850	94,833	1,724,719	212,847	63,131
1974	337,799	2,165,937	106,016	2,096,198	231,783	69,739
1975	280,341	2,406,082	92,731	2,353,936	187,610	52,146
1976	270,875	2,178,265	82,937	2,119,846	187,938	58,419
1977	284,583	2,453,423	92,270	2,393,964	192,313	59,459
1978	327,460	3,142,594	87,589	3,050,209	239,871	92,385
1979	345,218	4,064,045	89,586E	3,934,566E	255,632E	129,479E
1980	323,899	4,812,349	88,428E	4,674,068E	235,471E	138,281E
1981	301,313	5,111,253	87,981E	5,007,848E	213,332E	103,405E
1982	178,638	3,804,250	53,141E	3,738,397E	125,497E	65,853E
1983(r)	150,837	2,144,849	43,199E	1,986,212E	107,638E	58,637E
1984(r)	162,490	2,423,263	49,307E	2,358,306E	113,183E	64,657E
1985(p)	147,791	2,729,330	51,555E	2,670,775E	96,236E	58,555E

p - Preliminary. r - Revised. NA - Not Available. E - Estimate by NMTBA.

(a) Includes some metalworking machinery which are not machine tools for 1959 through 1967. These metalworking machines are excluded after 1967.

Source: U.S. Dept. of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

Data on shipments of complete machine tools published in the "Current Industrial Reports" series of the Census tend to vary slightly from those published by NMTBA. There are several reasons for the difference; among them is the fact that NMTBA reports are extended to a 100 percent estimate based on earlier coverage by the "Current Industrial Reports" series. Refer to this chapter's introduction for a detailed explanation of the various sources of statistics for machine tools.

SHIPMENTS OF METAL CUTTING MACHINE TOOLS

Average Value Over & Under $1,000, 1958 to 1977, Over and Under $2,500, 1978 to Date

(Values in Thousands of Dollars)

Year	Total Shipments		Machines Valued at $1,000 or More		Machines Valued Less Than $1,000	
	Units	Value	Units	Value	Units	Value
1958	NA	$ 462,934	NA	NA	NA	NA
1959	143,380	468,777	45,212	$ 447,009	98,168	$ 21,768
1960	133,511	539,340	42,914	520,294	90,597	19,046
1961	124,260	531,343	40,363	512,424	83,897	18,919
1962	138,855	626,833	47,942	606,297	90,913	20,536
1963	139,896	657,607	50,353	635,157	89,543	22,450
1964	153,831	874,467	58,714	852,392	95,117	22,075
1965	184,168	1,047,823	68,005	1,021,331	116,163	26,492
1966	242,698	1,231,907	80,673	1,194,149	162,025	37,758
1967	236,167	1,373,178	86,014	1,336,419	150,153	36,759
1968	225,778	1,309,361	70,505	1,271,876	155,273	37,485
1969	229,974	1,242,550	65,199	1,198,504	164,775	44,046
1970	188,491	1,097,718	49,314	1,061,066	139,177	36,652
1971	157,099	714,454	32,443	677,841	124,656	36,613
1972	207,290	857,964	47,846	821,899	159,444	36,065
1973	252,237	1,224,715	63,685	1,175,058	188,552	49,657
1974	272,811	1,525,575	69,060	1,466,671	203,751	58,904
1975	229,169	1,790,360	65,883	1,750,797	163,286	39,563
1976	212,757	1,592,216	54,974	1,546,631	157,783	45,585
1977	220,017	1,791,293	59,500	1,743,724	160,517	47,569
1978	257,647	2,334,425	58,116	2,265,541	199,531	68,884
1979	263,019	3,037,205	59,453E	2,943,225E	203,566E	93,980E
1980	248,563	3,716,370	62,185E	3,612,645E	186,378E	103,725E
1981	234,647	4,046,940	66,076E	3,978,970E	168,571E	67,970E
1982	130,434	2,940,626	35,060E	2,899,429E	95,374E	41,197E
1983(r)	100,764	1,564,204	27,088E	1,532,210E	73,676E	31,994E
1984(r)	105,962	1,712,834	31,723E	1,678,001E	74,259E	34,833E
1985(p)	94,260	1,900,471	32,669E	1,870,102E	61,591E	30,369E

p - Preliminary. r - Revised. NA - Not available. E - Estimate by NMTBA.

Source: U.S. Dept. of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly & Annual Summaries).

SHIPMENTS OF METAL FORMING MACHINE TOOLS

Average Value Over & Under $1,000, 1958 to 1977, Over and Under $2,500, 1978 to Date (a)

(Values in Thousands of Dollars)

Year	Total Shipments		Machines Valued at $1,000 or More		Machines Valued Less Than $1,000	
	Units	Value	Units	Value	Units	Value
1958	NA	$ 203,973	NA	NA	NA	NA
1959	53,321	210,761	20,680	$ 201,359	32,641	$ 9,402
1960	49,631	238,352	19,311	229,606	30,320	8,746
1961	46,722	233,110	17,140	224,627	29,582	8,483
1962	51,433	240,436	19,736	231,073	31,697	9,363
1963	58,675	309,526	22,902	299,328	35,773	10,198
1964	58,426	334,609	22,306	324,253	36,120	10,356
1965	66,324	409,862	25,345	396,963	40,979	12,899
1966	79,007	480,942	31,981	464,502	47,026	16,440
1967	75,305	496,120	31,637	483,778	43,668	12,342
1968	75,336	413,366	25,422	396,976	49,914	16,390
1969	78,299	449,638	26,949	432,735	51,350	16,903
1970	63,940	454,059	24,203	440,388	39,737	13,671
1971	54,333	343,416	19,400	331,548	34,933	11,868
1972	59,775	411,338	24,107	398,622	35,668	12,716
1973	55,443	563,135	31,148	549,661	24,295	13,474
1974	64,988	640,362	36,956	629,527	28,032	10,835
1975	51,172	615,722	26,848	603,139	24,324	12,583
1976	58,118	586,049	27,963	573,215	30,155	12,834
1977	64,566	662,130	32,770	650,240	31,796	11,890
1978	69,813	808,169	29,473	784,668	40,340	23,501
1979	82,199	1,026,840	30,133	991,341	52,066	35,499
1980	75,336	1,095,979	26,243	1,061,423	49,093	34,556
1981	66,666	1,064,313	21,905	1,028,878	44,761	35,435
1982(r)	48,204	863,624	18,081	838,968	30,123	24,656
1983(r)	50,073	580,645	16,111	554,002	33,962	26,643
1984(r)	56,508	710,429	17,584	680,342	38,924	30,087
1985(p)	53,531E	828,859E	18,886E	800,673E	34,645	28,186

p - Preliminary. r - Revised. NA - Not Available.

(a) Includes some metalworking machinery which are not machine tools for 1959 through 1967. These metalworking machines are excluded after 1967.

Source: U.S. Dept. of Commerce, "Current Industrial Reports, Series, MQ-35W, Metalworking Machinery" (Quarterly & Annual Summaries).

SHIPMENTS OF METAL CUTTING MACHINE TOOLS

By Class of Product, 1954 to Date

(Millions of Dollars)

Year	TOTAL	35411 Boring Machines	35412 Drilling Machines	35413 Gear Cutting and Finishing	35414 Grinding and Polishing	35415 Lathes	35416 Milling Machines	35417 Other Metal Cutting Machines
1954	$ 879.0	$114.4	$ 86.1	$ 48.1	$154.3	$206.9	$122.5	$ 146.7
1955	665.8	77.4	53.8	36.6	123.9	153.3	89.6	131.2
1956	891.8	101.8	65.4	49.4	172.8	217.1	115.8	169.5
1957	878.3	102.0	56.3	38.9	160.1	199.8	155.0	166.2
1958	463.0	51.6	30.0	22.7	89.4	98.7	89.3	81.3
1959	468.8	46.2	33.4	24.7	93.8	119.5	73.3	77.9
1960	539.3	46.9	38.9	34.3	117.0	135.4	79.4	87.4
1961	531.3	51.5	36.8	36.4	121.0	126.5	73.7	85.4
1962	626.8	61.4	53.2	35.8	127.9	152.3	95.8	100.4
1963	657.6	67.9	52.0	39.5	136.8	154.8	106.1	100.5
1964	874.5	74.1	72.3	47.1	175.9	198.1	125.8	181.2
1965	1,047.8	91.9	83.2	55.7	213.6	234.8	144.0	224.7
1966	1,231.9	110.9	105.9	59.0	235.9	286.5	201.7	232.0
1967	1,373.2	117.8	122.8	63.9	247.8	334.0	234.3	252.6
1968	1,309.4	93.7	67.7	68.2	235.1	316.2	234.1	294.4
1969	1,242.6	80.2	67.5	65.6	227.3	288.9	184.6	328.5
1970	1,097.7	62.1	70.9	66.3	219.4	240.1	110.0	329.0
1971	714.5	35.8	43.4	50.1	142.9	174.9	54.4	212.7
1972	858.0	54.1	65.8	50.3	151.0	203.2	81.7	251.9
1973	1,224.7	66.7	90.5	55.4	209.6	299.0	104.6	398.9
1974	1,525.6	81.4	77.9	66.2	249.9	370.2	137.7	542.3
1975	1,790.4	83.9	92.9	65.1	273.2	464.2	134.0	677.1
1976	1,592.2	77.8	100.4	56.0	246.8	430.3	134.4	546.6
1977	1,791.3	84.9	107.2	61.4	273.1	436.3	160.2	668.1
1978	2,334.4	117.7	152.4	102.7	348.6	535.9	194.3	882.9
1979	3,037.2	177.4	150.5	111.2	474.9	650.3	279.8	1,193.1
1980	3,716.4	192.0	166.9	130.3	555.8	827.0	339.3	1,505.2
1981	4,046.9	231.0	140.0	133.1	615.4	816.8	436.6	1,674.2
1982(r)	2,940.6	193.8	65.9	86.5	486.7	507.3	265.6	1,334.9
1983(r)	1,564.2	95.8	41.1	35.8	280.8	320.9	146.5	643.4
1984(r)	1,712.8	94.5	37.2	42.4	335.6	307.6	179.9	715.5
1985(p)	1,900.5	83.5	38.7	51.8	413.5	318.6	180.3	814.0

p - Preliminary.   r - Revised.

Note: Other Metal Cutting Machines include machining centers, transfer machines, shapers, sawing and cutoff machines, and other metal cutting machines not classified elsewhere. For a breakdown by type, refer to pages detailing shipments of these machines also appearing in this chapter.

Individual items may not add to totals due to rounding.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF METAL CUTTING MACHINE TOOLS

By Class of Product, 1954 to Date

(Percentage of Dollar Value)

Year	35411 Boring Machines	35412 Drilling Machines	35413 Gear Cutting and Finishing	35414 Grinding and Polishing	35415 Lathes	35416 Milling Machines	35417 Other Metal Cutting Machines
1954	13.0%	9.8%	5.5%	17.6%	23.5%	13.9%	16.7%
1955	11.6	8.1	5.5	18.6	23.0	13.5	18.7
1956	11.4	7.3	5.5	19.4	24.3	13.0	19.0
1957	11.6	6.4	4.4	18.2	22.7	17.6	18.9
1958	11.1	6.5	4.9	19.3	21.3	19.3	17.6
1959	9.9	7.1	5.3	20.0	25.5	15.6	16.6
1960	8.7	7.2	6.4	21.7	25.1	14.7	16.2
1961	9.7	6.9	6.9	22.8	23.8	13.9	16.1
1962	9.8	8.5	5.7	20.4	24.3	15.3	16.0
1963	10.3	7.9	6.0	20.8	23.5	16.1	15.3
1964	8.5	8.3	5.4	20.1	22.7	14.4	20.7
1965	8.8	7.9	5.3	20.4	22.4	13.7	21.4
1966	9.0	8.6	4.8	19.1	23.3	16.4	18.8
1967	8.6	8.9	4.7	18.0	24.3	17.1	18.4
1968	7.2	5.2	5.2	18.0	24.1	17.9	22.5
1969	6.5	5.4	5.3	18.3	23.2	14.9	26.4
1970	5.7	6.5	6.0	20.0	21.9	10.0	30.0
1971	5.0	6.1	7.0	20.0	24.5	7.6	29.8
1972	6.3	7.7	5.9	17.6	23.7	9.5	29.4
1973	5.4	7.4	4.5	17.1	24.4	8.5	32.6
1974	5.3	5.1	4.3	16.4	24.3	9.0	35.6
1975	4.7	5.2	3.6	15.3	25.9	7.5	37.8
1976	4.9	6.3	3.5	15.5	27.0	8.4	34.3
1977	4.7	6.0	3.4	15.2	24.4	8.9	37.3
1978	5.0	6.5	4.4	14.9	23.0	8.3	37.9
1979	5.8	5.0	3.7	15.6	21.4	9.2	39.3
1980	5.2	4.5	3.5	15.0	22.3	9.1	40.5
1981	5.7	3.5	3.3	15.2	20.2	10.8	41.4
1982	6.6	2.2	2.9	16.6	17.3	9.0	45.4
1983(r)	6.1	2.6	2.3	18.0	20.5	9.4	41.1
1984(r)	5.1	2.2	2.5	21.8	16.8	9.5	42.8
1985(p)	4.4	2.0	2.7	21.8	16.8	9.5	42.8

p - Preliminary. r - Revised.

Individual percentages may not add to 100% due to rounding.

Source: U.S. Department of Commerce, "Current Industrial Report, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF METAL FORMING MACHINE TOOLS
By Type of Machine, 1954 to Date
(Millions of Dollars)

Year	TOTAL (a)	35422 Presses, Including Forging (b)	35423 (In Part) Forging Machines, Excluding Presses (c)	35421 (In Part) Punching and Shearing Machines	35421 (In Part) Bending and Forming Machines	35423 (In Part) 35485 (In Part) Other (a)
1954	$ 350.2	$216.4	$24.4	$ 26.3	$ 35.6	$ 47.5
1955	295.4	170.8	15.6	28.9	35.8	44.3
1956	384.1	240.1	15.5	34.9	48.8	44.8
1957	403.2	238.7	24.7	38.3	43.9	57.6
1958	209.0	76.5	17.4	32.0	32.1	51.0
1959	210.8	84.6	17.9	29.9	35.7	42.7
1960	238.4	105.0	21.0	32.9	34.3	45.2
1961	233.1	111.3	15.8	33.3	32.5	40.2
1962	240.4	109.5	23.7	34.5	29.0	43.7
1963	309.5	136.0	22.3	42.8	45.2	63.2
1964	334.6	169.5	23.1	33.2	42.7	66.1
1965	409.9	209.2	32.8	43.9	49.4	74.6
1966	480.9	253.3	32.7	49.7	51.0	94.2
1967	496.1	240.1	29.6	56.9	57.4	112.1
1968	413.4	199.1	31.9	57.1	64.4	60.9
1969	449.6	223.7	32.0	53.6	66.0	74.3
1970	454.1	239.6	36.6	47.7	59.8	70.4
1971	343.4	166.5	37.0	41.4	53.3	45.2
1972	411.3	166.7	34.5	62.5	67.9	79.8
1973	563.1	242.7	38.7	75.8	94.5	111.4
1974	640.4	307.0	40.1	86.1	113.0	94.2
1975	615.7	269.4	39.5	121.0	115.4	70.4
1976	586.0	223.6	52.2	120.0	118.8	71.4
1977	662.1	260.7	55.1	130.6	137.2	78.5
1978	808.2	350.9	59.3	146.6	147.7	103.7
1979	1,026.8	434.0	84.7	181.2	183.4	143.5
1980	1,096.0	440.8	73.8	204.2	214.9	162.3
1981	1,064.3	429.6	79.0	206.1	212.8	136.8
1982	863.6	344.8	79.0	142.2	166.5	131.1
1983(r)	580.6	160.8	48.0	120.1	138.6	113.1
1984(r)	710.4	212.4	39.0	139.2	168.0	161.9
1985(p)	828.9	253.6	34.5	161.8	178.2	200.7

p - Preliminary. r - Revised.

(a) Includes some metalworking machinery which are not machine tools for 1959 through 1967. These metalworking machines are excluded after 1967.

(b) Excludes forging presses from 1979 to date.

(c) Includes forging presses from 1979 to date.

Individual items may not add to totals due to rounding.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF METAL FORMING MACHINE TOOLS

By Type of Machine, 1954 to Date

(Percentage of Dollar Value)

Year	35422 Presses, Including Forging (b)	35423 (In Part) Forging Machines, Excluding Presses (c)	35421 (In Part) Punching and Shearing Machines	35421 (In Part) Bending and Forming Machines	35423 (In Part) 35485 (In Part) Other (a)
1954	61.8%	7.0%	7.5%	10.2%	13.5%
1955	57.8	5.3	9.8	12.1	15.0
1956	62.5	4.0	9.1	12.7	11.7
1957	59.2	6.1	9.5	10.9	14.3
1958	36.6	8.3	15.3	15.4	24.4
1959	40.1	8.5	14.2	16.9	20.3
1960	44.0	8.8	13.8	14.4	19.0
1961	47.7	6.8	14.3	13.9	17.3
1962	45.5	9.9	14.3	12.1	18.2
1963	44.0	7.2	13.8	14.6	20.4
1964	50.7	6.9	9.9	12.8	19.7
1965	51.0	8.0	10.7	12.1	18.2
1966	52.7	6.8	10.3	10.6	19.6
1967	48.4	5.9	11.5	11.6	22.6
1968	48.2	7.7	13.8	15.6	14.7
1969	49.8	7.1	11.9	14.7	16.5
1970	52.7	8.1	10.5	13.2	15.5
1971	48.5	10.8	12.0	15.5	13.2
1972	40.5	8.4	15.2	16.5	19.4
1973	43.1	6.9	13.4	16.8	19.8
1974	47.9	6.3	13.4	17.7	14.7
1975	43.8	6.4	19.7	18.7	11.4
1976	38.2	8.9	20.5	20.3	12.2
1977	39.4	8.3	19.7	20.7	11.9
1978	43.4	7.3	18.1	18.3	12.9
1979	42.3	8.2	17.6	17.9	14.0
1980	40.2	6.7	18.6	19.6	14.8
1981	40.4	7.4	19.4	20.0	12.9
1982	39.9	9.1	16.5	19.3	15.2
1983(r)	27.7	8.3	20.7	23.9	19.5
1984(r)	29.9	4.2	19.5	21.5	24.2
1985(p)	30.6	4.2	19.5	21.5	24.2

p - Preliminary. r - Revised.

(a) Includes some metalworking machinery which are not machine tools for 1959 through 1967. These metalworking machines are excluded after 1967.

(b) Excludes forging presses from 1979 to date.

(c) Includes forging presses from 1979 to date.

Individual percentages may not add to 100% due to rounding.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF NUMERICALLY CONTROLLED MACHINE TOOLS

By Type of Machine, 1970 to Date

(Values in Millions of Dollars)

Type of Machine	Year	SHIPMENTS of Machines and Controls		Year	SHIPMENTS of Machines and Controls	
		Units	Value		Units	Value
TOTAL						
	1970(a)	1,901	$ 209.0	1982(g)	6,066	$1,126.6
	1971(a)	1,286	153.2	1983(g)	4,781	677.1
	1972(a)	1,630	170.1	1984(r,g)	5,784	762.6
	1973(a)	2,865	272.1	1985(p,g)	5,350	822.1
	1974(a)	4,210	378.7			
	1975(a)	4,136	504.7			
	1976(a)	3,856	501.0			
	1977(a)	4,482	496.7			
	1978(a)	5,688	649.2			
	1979(g)	7,925	1,014.6			
	1980(g)	9,984	1,[illegible]71.7			
	1981(g)	8,945	1,467.3			
Boring Machines						
	1970	175	29.5	1982	231	110.7
	1971	92	18.4	1983	69	37.1
	1972	84	21.0	1984	119	45.1
	1973	128	26.8	1985(p)	88	34.8
	1974	146	33.7			
	1975	153	39.4			
	1976	120	35.6			
	1977	101	33.0			
	1978	127	47.3			
	1979	186	69.6			
	1980	226	92.5			
	1981	293	120.2			
Drilling Machines (h)						
	1970	215	13.0	1982	0	0
	1971	138	11.3	1983	0	0
	1972	118	8.4	1984	0	0
	1973	326	19.0	1985(p)	0	0
	1974	216	11.7			
	1975	100	11.0			
	1976	197	13.2			
	1977	288	20.0			
	1978	321	22.0			
	1979	237	17.7			
	1980	384	33.4			
	1981	455	52.8			
Lathes						
	1970	507	55.3	1982	1,489	333.4
	1971	428	50.4	1983(r)	1,202	224.6
	1972	570	67.1	1984(r)	1,497	207.8
	1973(c)	1,031	95.2	1985(p)	1,420	225.2
	1974	1,381	137.3			
	1975	1,640	212.7			
	1976	1,321	205.9			
	1977	1,178	195.3			
	1978	1,464	237.2			
	1979	2,362	347.7			
	1980	2,739	481.2			
	1981	2,021	441.4			

(Continued)

SHIPMENTS OF NUMERICALLY CONTROLLED MACHINE TOOLS

By Type of Machine, 1970 to Date

(Values in Millions of Dollars)

Type of Machine	Year	SHIPMENTS of Machines and Controls		Year	SHIPMENTS of Machines and Controls	
		Units	Value		Units	Value
Milling Machines (d)						
	1970	150	$ 23.4	1982	1,061	$ 185.6
	1971	105	12.6	1983	1,091	108.9
	1972	229	15.8	1984	1,434	108.9
	1973	240	16.1	1985	1,079	99.3
	1979	2,045	93.8			
	1980	2,600	162.7			
	1981	1,763	190.6			
Machining Centers						
	1970	651	68.9	1982(i)	1,396	357.6
	1971	344	46.6	1983(i)	1,005	182.9
	1972	475	45.3	1984(i)	1,237	213.2
	1973	1,162	115.1	1985(p,i)	1,093	218.4
	1974	1,692	163.1			
	1975	1,460	196.8			
	1976	1,225	178.4			
	1977	1,201	175.0			
	1978	1,486	246.0			
	1979	1,953	356.5			
	1980	2,132	413.0			
	1981	2,081	482.7			
Grinding and Polishing Machines						
	1980	271	32.9	1983	494	42.7
	1981	645	46.7	1984	546	65.9
	1982	590	49.6	1985(p)	946	122.4
All Other Metal Cutting and Metal Forming Type Machine Tools						
	1970	203	19.0	1982(g)	1,299	89.6
	1971	131	13.9	1983(g)	920	80.9
	1972	154	12.6	1984(g)	951	121.7
	1973(a,e)	17	5.0	1985(p,g)	946	122.0
	1974(a,f)	775	32.8			
	1975(a,f)	783	44.8			
	1976(a,f)	993	67.9			
	1977(a,f)	1,714	73.4			
	1978(a,f)	2,290	96.7			
	1979(g)	936	100.7			
	1980(g)	1,632	156.0			
	1981(g)	1,667	133.0			

p - Preliminary. r - Revised.

(a) No metal forming NC data are included.
(b) Beginning with 1973, data no longer published.
(c) Includes data for grinding and polishing machines.
(d) For 1974-1978 data were included in the "All Other" category.
(e) For 1973 only, grinding and polishing machines are reported with lathes and are not included in the "All Other" category.
(f) Includes milling machines and grinding and polishing machines.
(g) Includes data for punching, shearing, bending, and forming machines; all other metal forming NC data withheld to avoid disclosure.
(h) The data for 1982 and 1983 should have been reported in "Machining Centers." It is possible that the data for 1970 through 1981 was misclassified and overstated.
(i) The data for 1982 and 1983 reflect the addition of misclassified data, originally reported in "Drilling Machines."

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

NUMERICALLY CONTROLLED AND AUTOMATIC METALWORKING MACHINERY

By Type of Control

Total Shipments and Unfilled Orders, 1964 to 1972 (a)

	SHIPMENTS			UNFILLED ORDERS December 31		
	Number of Machines	Millions of Dollars		Number of Machines	Millions of Dollars	
		Machines & Controls	Controls Only		Machines & Controls	Controls Only
TOTAL						
1964	1,517	$ 105.5	$ 29.2	987	$ 113.7	$ 26.4
1965	2,100	159.3	43.9	1,964	211.3	57.1
1966	2,939	249.1	55.5	2,439	329.3	75.7
1967	2,957	284.9	69.4	2,054	337.9	72.1
1968	2,917	353.8	81.2	1,336	253.8	53.3
1969	2,376	293.9	70.2	1,148	172.3	36.9
1970	1,901	209.0	50.1	683	121.8	26.3
1971	1,238	153.2	36.0	581	107.7	23.3
1972	1,630	170.1	42.3	1,334	182.1	50.6
Point-to-Point Positioning						
1964	1,145	52.4	15.0	586	43.9	12.2
1965	1,604	89.0	25.9	1,278	93.5	25.6
1966	2,044	126.4	26.1	1,422	139.0	33.4
1967	2,050	143.0	36.1	1,033	100.3	24.0
1968	1,752	141.6	34.8	530	67.3	16.4
1969	1,324	110.2	27.6	507	54.7	12.8
1970	1,033	82.3	19.2	222	38.3	7.7
1971	476	50.4	11.2	146	30.3	6.2
1972	605	49.5	10.4	337	50.8	15.7
Continuous Path Activated by Tape or Punch Card						
1964	172	36.7	11.2	151	35.0	10.7
1965	229	43.7	13.8	383	86.1	25.7
1966	524	79.5	22.9	637	151.4	33.8
1967	621	113.2	27.3	782	211.4	41.4
1968	991	198.2	43.2	700	176.6	34.5
1969	899	171.0	39.8	577	108.6	22.7
1970	785	118.9	29.5	423	78.4	17.9
1971	711	97.6	23.8	425	76.6	16.9
1972	989	117.4	31.3	977	128.3	34.4
Dial or Plug Board Type of Prerecorded Motion Program Control						
1964	200	16.4	3.0	250	34.8	3.5
1965	267	26.6	4.2	303	31.7	5.8
1966	371	43.2	6.5	380	38.9	8.5
1967	286	28.7	6.0	239	26.2	6.7
1968	174	14.0	3.2	106	9.9	2.4
1969	153	12.7	2.8	64	9.0	1.4
1970	83	7.9	1.4	38	5.1	0.7
1971	51	5.2	0.9	10	0.8	0.2
1972	36	3.3	0.6	20	3.0	0.4

(a) The publication of this data was discontinued in 1973.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF BORING MACHINES
Units and Value, 1978 to Date

Products	1978	1979	1980	1981	1982	1983(r)	1984(r)	1985(p)
UNITS								
TOTAL	922	1,671	1,793	1,699	994	455	522	422
Horizontal Boring, Drilling & Milling Machines								
Table Type	104	97	102	115	77	29	27E	D
Floor Type	85	82	72	29				
Precision Boring Machines	648	868	771	661	564	370	400	372
Jig Boring Machines All Other Boring Machines	85	624	848	894	353	56(a)	45E(a)	D(a)
VALUE (Millions of Dollars)								
TOTAL	$117.7	$177.7	$192.0	$231.0	$193.8	$95.8	$94.5	$83.5
Horizontal Boring, Drilling and Milling Machines								
Table Type	35.6	38.1	41.4	53.0	51.4	20.5	35.3E	D
Floor Type	15.3	21.4	23.8	15.5				
Precision Boring Machines	50.2	87.8	96.3	122.1	109.7	60.5	49.7	48.9
Jig Boring Machines All Other Boring Machines	16.6	30.1	30.5	40.4	32.7	14.8(a)	9.5	D(a)

p - Preliminary. r - Revised. E - Estimated by NMTBA. D - Data withheld to avoid disclosure.

(a) There were no machines valued less than $2,500.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF GEAR CUTTING MACHINES
Units and Value, 1978 to Date

Products	1978	1979	1980	1981	1982	1983(r)	1984(r)	1985(p)
UNITS								
TOTAL	878	828	931	837	445	158	199	243
Gear Tooth Finishing Machines(a)	488	646	432	254	160	90	96	164
Gear Hobbers-Horizontal and Vertical(b)	390	182	499	583	285	68		79
All Other Gear Cutting Machines	0	(c)	(c)	(c)	0	0	103	(c)
VALUE (Millions of Dollars)								
TOTAL	$102.7	$111.2	$130.3	$133.1	$86.5	$35.8	$42.4	$51.8(p)
Gear Tooth Finishing Machines (a)	66.2	91.3	69.0	55.3	39.9	24.8	18.0	34.6
Gear Hobbers-Horizontal and Vertical (b)	36.4	19.9	61.3	77.9	46.7	10.9		17.2
All Other Gear Cutting Machines	0	(c)	(c)	(c)	0	0	24.4	(c)

p - Preliminary. r - Revised.

(a) Includes level gear generators.
(b) Includes gear shapers.
(c) Included in gear tooth finishing machines.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF DRILLING MACHINES
Units and Value, 1978 to Date

Products	1978	1979	1980	1981	1982(r)	1983(r)	1984(r)	1985(p)
UNITS								
TOTAL	52,247	44,697	34,898	27,195	17,046	13,094	12,051	9,383
Unit Value Under $2,500	49,412	41,476	31,474	24,129	15,491	12,269	11,078	8,358
Unit Value $2,500 and Over	2,835	3,221	3,424	3,066	1,555	825	973	1,025
Vertical Drilling Machines								
Plain Upright	438	1,339(c)	1,089(c)	892(c)	546(c)	296(e)	342(e)	218(e)
Indexing Turret Head, Heavy Duty and Other	277 (b)							
Radial Drilling Machines								
Plain and Universal Under 13"	54	226	232	331	163	122	100	165
All Other	D							
Deep Hole Drilling Machines	(a)	184	190	154	110			
Multiple Spindle Drilling Machines								
Adjustable Joint, Fixed Center	290	378	628	522	386	225	216	346
Automatic Drilling	598	797	(a)	(a)	272	180	315	296
All Other	D							
All Other Drilling Machines	256	297	1,285	1,167	78			
VALUE (Millions of Dollars)								
TOTAL	$152.4	$150.5	$186.9	$139.9	$65.9	$41.1	· $37.2	$38.7
Unit Value Under $2,500(a)	22.2	25.9	18.6	20.2	12.0	11.3	9.7	8.9
Unit Value $2,500 & Over	130.2	124.6	148.3	119.8	53.9	29.8	27.5	
Vertical Drilling Machines								29.9
Plain Upright	2.6							
Indexing Turret Head, Heavy Duty and Other)	7.5(b)	18.2(c)	22.7(c)	22.1(c)	6.7(c)	6.9(e)	5.0(e)	31.2(e)
Radial Drilling Machines								
Plain and Universal Under 13"	1.7	9.7	12.6	14.0	5.3	7.4	7.1	10.2
All Other	D							
Deep Hole Drilling Machines	(a)	5.8	10.6	15.7	10.4			
Multiple Spindle Drilling Machines								
Adjustable Joint, Fixed Center	11.6	21.1	26.2	20.1	10.7	6.6	7.4	8.0
Automatic Drilling	67.0	57.0	(a)	(a)	15.6	8.8	8.0	8.5
All Other	D							
All Other Drilling Machines	9.5	18.6	76.2	47.8	5.2			

p - Preliminary. r - Revised. D - Withheld to avoid disclosure.

(a) Included with "All Other Drilling Machines."
(b) Average value $2,500 and over for 1978 to date.
(c) Included with "All Other Drilling Machines."
(d) Includes only heavy duty. Disclosure was reported for indexing turret head and other.
(e) Includes all vertical drilling machines.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF LATHES
Units and Value, 1971 to 1978

Products	1971	1972	1973	1974	1975	1976	1977	1978
UNITS								
TOTAL	11,071	12,295	16,904	19,305	17,581	14,085	11,249	13,557
Unit Value Under $1,000 (a)	D	D	D	D	D	D	D	D
Unit Value $1,000 and Over (b)	D	D	D	D	D	D	D	D
Bench Lathes (Except Bench Turret Lathes)	D	D	(e)	(d)	(d)	(d)	(d)	(d)
Manufacturing and Tool Room Lathes								
Engine & Tool Room (Light and Heavy), Floor Mounted								
Up to and Including 16" Swing Over Cross Slide	4,317	4,383	6,611	3,929(e)	3,836(e)	2,869(e)	4,510	3,640
17" to 23" Swing	139	126	285	(f)	(f)	(f)	157E }	141
24" Swing and Over	61	53	52	296	321	300	D }	
All Other Mfg. and Tool Room	D	D	D	D	D	D	1,804	1,965
Turret Lathes								
Bench and Floor Light Duty Type	1,052(c) }	665(c)	D	D	D	D	D	D
Ram Type	100E }							
Automatic Chucking Lathes								
Single Spindle	351	547	828	896	1,050	637(g)E	790(g)	1,076(g)
Multiple Spindle	231	182	270	248	214	174	214	255
Automatic Between Center Lathes	88	107	217	236	179	99	141	179
Screw (bar) Machines	933	1,107	1,434	1,676	1,189	1,051(h)E	696(h)	782(h)
Vertical Turning and Boring Mills	87E	98E	108	153	183	171	121	129
All Other	631	465	1,893	505	448	701	712	846
VALUE(Millions of Dollars)								
TOTAL	$174.9	$203.2	$299.0	$370.2	$464.2	$430.3	$436.3	$535.9
Unit Value Under $1,000(a)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Unit Value $1,000 and Over(b)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Bench Lathes(Except Bench Turret Lathes)	(D)	(D)	(d)	(d)	(d)	(d)	(d)	(d)
Manufacturing and Tool Room Lathes								
Engine & Tool Room(Light and Heavy), Floor Mounted								
Up to and Including 16" Swing Over Cross Slide	26.3	28.4	48.8	50.5(e)	55.9(e)	54.6(e)	53.4	64.0(r)
17" to 23" Swing	6.3	4.0	10.4	(f)	(f)	(f)	11.1E }	18.4
24" Swing and Over	6.5	6.5	3.8	20.7	31.8	30.6	D }	
All Other Mfg. and Tool Room	D	D	D	D	D	D	18.7	23.1
Turret Lathes								
Bench and Floor Light Duty Type	15.1(c) }	22.0(c)	D	D	D	D	D	D
Ram Type	2.7E }							
Automatic Chucking Lathes								
Single Spindle	21.3	27.3	47.7	60.2	82.6	59.4(g)E	72.2(g)	100.9(g)
Multiple Spindle		17.0	30.1	27.6	32.3	30.6	37.9	50.2
Automatic Between Center Lathes	5.4	8.0	14.5	19.0	18.6	13.4	23.0	31.4
Screw (bar) Machines	36.3	42.8	56.9	70.1	73.7	52.9(h)E	61.4(h)	71.5(h)
Vertical Turning and Boring Mills	18.4E	20.7E	20.2	30.9	42.3	46.1	38.5	42.2
All Other	12.1	20.3	30.6	26.3	38.7	26.7	29.9	48.1

E - Estimate by NMTBA D - Withheld to avoid disclosure.

(a) Unit Value Under $2,500 for 1978 to date.
(b) Unit Value $2,500 and over for 1978 to date.
(c) Includes saddle type.
(d) Included with "All Other."
(e) Excludes 8" and under.
(f) Included with 24" Swing and Over.
(g) Includes single spindle with index turret only. Disclosure was reported for single spindle without index turret.
(h) Includes multiple spindle only. Disclosure was reported for single spindle.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF LATHES
Units and Value, 1980 to Date
(Millions of Dollars)

Products	1980	1981	1982(r)	1983(r)	1984(r)	1985(p)
TOTAL UNITS	17,937	16,904	4,508	3,695	4,300	3,831
NUMERICALLY CONTROLLED UNIT VALUE OVER $2,500						
Turning Machines-Horizontal Spindle						
Small	1,532	977	775	793	1,005	1,076
Medium	768	541	308	194	252	164
Large	224	266	212	116	75	104
Turning Machines-Vertical Spindle Turret & Boring Machines over 30" All Other	215	237	194	99	165	76
NON-NUMERICALLY CONTROLLED						
UNIT VALUE UNDER $2,500	D	D	247	250	310E	16
UNIT VALUE $2,500 and Over	D	D	2,772	2,243	2,489E	2,395
Mfg, Tool Room and Engine & Tool Room (Light and Heavy)						
Floor Mounted						
0" to 16" Swing Over Cross Slide	2,211	2,657	1,374	1,184	344(a)	278(a)
17" and Over All Other Engine & Tool Room Lathes	246	240	157	63	72	D
Turret Lathes						
Horizontal Type	1,063	D	D	422	D	D
Automatic Lathes-Single Spindle						
Bar (Screw) Machines	D	D	D	D	D	D
Chucking Machines	561	357	142	D	D	D
Automatic Lathes-Multiple Spindle						
Bar (Screw) Machines	848	809	293	233	334	231
Chucking Machines	176	131	54	D	D	D
Automatic Between Center Lathes All Other Horizontal Turning Machines	115	182	62	13	D	D
Vertical Turret Lathes and Boring Machines	D	D	D	D	D	D
All Other Vertical Turning Machines	D	D	D	D	D	D
All Other Non-Numerically Controlled	D	D	D	D	D	D
TOTAL VALUE (Millions of Dollars)	$827.0	$816.8	$507.3	$320.9	$310.3	$318.6
NUMERICALLY CONTROLLED AVERAGE OVER $2,500						
Turning Machines-Horizontal Spindle						
Small	$167.0	$134.2	$ 87.9	$ 84.1	$108.1	$131.9
Medium	168.5	128.7	74.8	41.1	47.2	31.4
Large	64.5	83.7	75.8	48.0	22.5	26.4
Turning Machines-Vertical Spindle Turret & Boring Machines over 30" All Other	81.1	94.8	94.8	51.3	29.9	35.5
NON-NUMERICALLY CONTROLLED						
UNIT VALUE UNDER $2,500	D	D	0.5	0.7	1.1E	0
UNIT VALUE $2,500 and Over	D	D	173.4	95.7	96.7E	93.3
Mfg, Tool Room Lathes and Engine & Tool Room (Light and Heavy)						
Floor Mounted						
0" to 16" Swing Over Cross Slide	26.2	27.9	20.5	15.9	5.9(a)	3.0(a)
17" and Over All Other Engine and Tool Room Lathes	29.0	27.8	20.5	9.5	10.4	D
Turret Lathes						
Horizontal Type	17.3	D	D	6.8	D	D
Automatic Lathes-Single Spindle						
Bar (Screw) Machines	D	D	D	D	D	D
Chucking Machines	32.8	26.1	8.4	D	D	D
Automatic Lathes-Multiple Spindle						
Bar (Screw) Machines	89.9	99.6	40.7	24.3	29.6	28.4
Chucking Machines	33.5	30.9	14.1	D	D	D
Automatic Between Center Lathes All Other Horizontal Turning Machines	25.8	46.8	15.7	2.6	D	D
Vertical Turret Lathes and Boring Machines	D	D	D	D	D	D
All Other Vertical Turning Machines	D	D	D	D	D	D
All Other Non-Numerically Controlled	D	D	D	D	D	D

D - Withheld to avoid disclosure. r - Revised. p - Preliminary. E - Estimated by NMTBA.

(a) Over 8 inches to 16 inches.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF GRINDING AND POLISHING MACHINES (e)

Units, 1978 to Date

Products	1978	1979	1980	1981	1982(r)	1983	1984(r)	1985(p)
UNITS								
TOTAL	110,202	107,288	97,004	91,548	58,362	56,864	60,189	51,044
Unit Value Under								
$2,500	91,373	89,238	79,509	76,687	48,651	50,512	51,614	41,907
and Over $2,500	18,829	18,050	17,495	14,861	9,711	6,352	8,575	9,137
External Cylindrical Grinding Machines								
Plain	247	325	297	383	394	140	104	93
Universal	226	313	305	291	302	242	216	208
Roll and Centerless	546	821	935	880	637	378	366	538
All Other External (a)								
Internal Cylindrical								
Grinding Machines	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Surface Grinding Machines								
Rotary Table Type	289	397	348	264	152	120	137	116
Reciprocating Table Type								
Vertical and Horizontald)	1,921(b)	2,217	2,941	1,850	1,270	862	1,042	1,031
Hand Surface Type	2,839	3,147	3,523	1,822	1,310	1,251	1,708	1,646
Planer Type and All Other	(c)		(c)	(c)	(c)	(c)	(c)	(c)
Bench, Floor and								
Snag Grinders	1,359	728	537	484	469	316	460	407
Tool and Cutter Grinding Machines								
Universal	2,111	2,367	2,610	2,818	1,568	851	955	1,333
Special								
Polishing and Buffing Machines								
Stand, drum & disc types	849	543	326	309	(c)	(c)	332	314
All Other Polishing	2,011	2,083	1,581	1,501	650	501	812	873
Honing and Lapping Machines								
Honing Machines (Except Gear)								
Internal and External	1,667	2,154	1,871	1,486	1,002	(c)	(c)	(c)
All Other Honing and								
Lapping Machines	362	535	370	354	(c)	(c)	(c)	(c)
All Other (d)	4,402	2,420	1,851	2,419	1,957	1,691	2,443	2,578

p - Preliminary. r - Revised.

(a) Includes chucking grinders.
(b) Includes "Horizontal" only, "Vertical" not disclosed due to confidentiality considerations.
(c) Included in "All Other."
(d) This item includes items not disclosed, see footnotes (a) and (b).
(e) Except gear-tooth grinding, lapping, polishing, and buffing machines.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF GRINDING AND POLISHING MACHINES (e)
Value, 1978 to Date

Products	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
VALUE (Millions of Dollars)								
TOTAL	$348.6	$474.9	$555.8	$615.4	$486.7	$280.8	$335.6	$413.5
Unit Value Under $2,500 (a)	11.6	16.8	16.8	17.9	13.2	12.1	13.7	10.6
Unit Value $ 2,500 and Over	337.0	458.1	539.0	597.5	473.5	268.7	321.9	402.9
External Cylindrical Grinding Machines								
Plain	33.6	43.5	42.1	63.9	68.9	30.2	22.8	21.4
Universal	12.0	17.2	17.7	18.6	23.7	18.2	14.5	15.5
Roll and Centerless	64.4	107.5	132.0	160.8	93.6	44.3	47.2	72.8
All Other External (a)								
Internal Cylindrical Grinding Machines	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Surface Grinding Machines								
Rotary Table Type	21.2	35.3	36.7	36.5	21.4	19.2	21.9	16.9
Reciprocating Table Type								
Vertical and Horizontal	27.4(b)	35.3	49.1	37.7	35.4	14.1	24.1	20.5
Hand Surface Type	13.3	16.8	21.6	13.8	11.2	8.3	13.9	11.5
Planer Type and All Other	(c)		(c)	(c)	(c)	(c)	(c)	(c)
Bench, Floor and Snag Grinders	16.9	7.5	6.2	7.3	3.5	2.2	7.6	5.0
Tool and Cutter Grinding Machines								
Universal	19.7	26.0	32.5	36.4	31.1	28.4	35.0	55.2
Special								
Polishing and Buffing Machines								
Stand, drum & disc types	8.4	10.9	5.8	8.6	(c)	(c)	4.6	6.2
All Other Polishing	20.6	24.1	28.7	33.2	24.4	14.4	22.4	24.6
Honing and Lapping Machines								
Honing Machines (Except Gear) Internal and External	15.7	20.4	29.1	28.3	23.0	(c)	(c)	(c)
All Other Honing and Lapping Machines	9.4	10.7	11.7	13.9	(c)	(c)	(c)	(c)
All Other (d)	74.4	102.9	125.8	138.5	137.3	89.4	107.9	153.3

p - Preliminary. r - Revised.

(a) Includes chucking grinders.
(b) Includes "Horizontal" only, "Vertical" not disclosed due to confidentiality considerations.
(c) Included in "All Other."
(d) This item includes items not disclosed, see footnotes (a) and (b).
(e) Except gear-tooth grinding, lapping, polishing, and buffing machines.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF BROACHING MACHINES, SHAPERS, SAWING AND CUTOFF MACHINES AND OTHER METAL CUTTING MACHINES

Units, 1978 to Date

Products	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
UNITS								
TOTAL	65,239	70,922	76,770	77,220	39,946	18,246	19,553	19,945
Unit Value Under $2,500	53,432	59,852	64,819	64,347	29,990	9,609	10,816	10,990
Unit Value $2,500 and Over	11,807	11,070	11,951	12,873	9,956	8,637	8,737	8,955
Broaching Machines								
Hydraulic	239	295	269	204	166	120	143	144
Mechanical and Other								
Planers, Shapers (Except Gear)and Slotters	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sawing and Cutoff Machines								
Power Hack Saws	433	453	556	509	562	1,032	617	122
Circular Cutoff Saws	164	134	142	145	100	102	140	(c)
Abrasive Cutoff Saws	598	499	526	497	322	219	166	(c)
Band Saw	2,889	3,874	4,223	5,316	4,066	2,971	3,565	4,406
Contour Sawing and Filing Machines	(a)	970	619	840	1,228	1,180	817	1,349
All Other	226							
Tapping Machines	264	303	286	412	373	460	704	206
Multi-Function N/C Machines:								
Drill, Mill, Bore:								
Manual Tool change-Vert. & Horizontal	327	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Indexing Turret								
Automatic Tool change								
Vertical	611							
Horizontal	548							
Transfer Machines								
Dial or Rotary	960	130	451	491	270	270	318	236
Way Type		91	126	64	54	46	(a)	
Station Type, Transfer		574	517	439	346	138	173	192
Other, N.E.C.		203	218	185	122	121	(a)	100
Electrical Discharge Machines (EDM)	1,423	1,857	2,234	1,725	1,113	1,055	1,237	1,129
Electrochemical Machines (ECM)	3,125							
All Other Metal Cutting Machines (b)		1,687	1,784	2,046	1,234	923	857	1,071

p - Preliminary. r - Revised.

(a) Included with "All Other."

(b) Includes items not disclosed due to confidentiality considerations, see footnote (a).

(c) Beginning with 1979 there is a new classification for Machining Centers, see page 111.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF BROACHING MACHINES, SHAPERS, SAWING AND CUTOFF MACHINES AND OTHER METAL CUTTING MACHINES

Value, 1978 to Date

Products	1978	1979	1980	1981	1982	1983(r)	1984(r)	1985(p)
VALUE (Millions of Dollars)								
TOTAL	$756.1	$836.6	$1,092.2	$1,191.5	$977.3	$460.5	$502.4	$595.6
Unit Value Under $2,500	28.3	28.6	31.7	25.7	14.8	7.2	9.6	10.2
Unit Value $ 2,500 and Over,	727.8	808.6	1,060.5	1,165.8	962.5	453.3	492.8	585.4
Broaching Machines								
Hydraulic	25.7	31.6	33.6	36.0	38.3	15.1	19.6	18.9
Mechanical and Other								
Planers, Shapers (Except Gear) and Slotters	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
Sawing and Cutoff Machines								
Power Hack Saws	2.2	3.4	3.4	3.2	3.4	5.2	3.2	0.9
Circular Cutoff Saws	7.6	10.6	11.6	22.2	5.1	2.3	2.9	(c)
Abrasive Cutoff Saws	3.5	3.1	4.7	5.5	3.5	2.4	2.3	(c)
Band Saws	32.1	43.6	50.9	56.8	49.6	29.1	36.7	44.4
Contour Sawing and Filing Machines	(a)	18.4	20.5	24.0	37.1	24.7	16.3	26.5
All Other	9.9							
Tapping Machines	3.3	4.8	6.7	7.2	7.7	7.0	13.1	15.3
Multi-Function N/C Machines:								
Drill, Mill, Bore:								
Manual Tool Change- Vert. & Horizontal	31.3	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Indexing Turret								
Automatic Tool Change								
Vertical	71.8							
Horizontal	142.9							
Transfer Machines								
Dial or Rotary	322.5	29.9	80.0	70.1	48.0	25.6	35.7	45.0
Way Type		22.2	32.8	38.7	57.8	25.6	(a)	
Station Type, Transfer		494.9	592.6	684.5	540.4	153.4	221.8	290.1
Other, N.E.C.		60.6	108.1	102.8	84.9	69.5	(a)	52.4
Electrical Discharge Machines (EDM)	29.0	45.7	78.1	66.9	35.8	48.5	46.2	41.5
Electrochemical Machines (ECM)	46.0							
All Other Metal Cutting Machines (b)		39.2	37.6	47.8	51.0	44.9	95.0	50.4

p - Preliminary. r - Revised.

(a) Included with "All Other."
(b) Includes items not disclosed due to confidentiality considerations, see footnote (a).
(c) Beginning with 1979 there is a new classification for Machining Centers, see page 112.

Individual items may not add to totals due to rounding.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF MACHINING CENTERS
Units and Value, 1980 to Date

Products	1980	1981	1982	1983	1984(r)	1985(p)
UNITS						
TOTAL	2,132	2,081	1,396	1,005	1,237	1,093
Unit Value over $2,500						
Drill, Mill, Bore-Manual Tool Change (Vertical and Horizontal)	298	263	249	133	(a)	(a)
Drill, Mill, Bore-Vertical (Automatic Tool Change)						
Y-axis Travel Less Than 20 Inches	(a)	(a)	(a)	(a)	452	358
Y-axis Travel 20 Inches to 26 Inches	531	539	309	210	241	224
Y-axis Travel Over 26 Inches	238	280	193	91	122	96
Drill, Mill, Bore-Horizontal (Automatic Tool Change)						
Y-axis Travel Less Than 27 Inches	434	429	237	114	171	143
Y-axis Travel 27 Inches to 40 Inches	205	233	166	64	71E	94E
Y-axis Travel Over 40 Inches	138	127	107	36	19E	51E
All Other Machining Centers (b)	288	210	135	357	160E	127E
VALUE (Millions of Dollars)						
TOTAL	$413.0	$482.7	$357.6	$182.9	$213.2	$218.4
Unit Value over $2,500						
Drill, Mill, Bore-Manual Tool Change (Vertical and Horizontal)	32.1	32.4	33.2	18.5	(a)	(a)
Drill, Mill, Bore-Vertical (Automatic Tool Change)						
Y-axis Travel Less than 20 Inches	(a)	(a)	(a)	(a)	38.4	35.3
Y-axis Travel 20 Inches to 26 Inches	73.8	84.7	48.1	28.3	32.5	32.0
Y-axis Travel Over 26 Inches	46.7	59.4	39.8	17.6	24.0	22.1
Drill, Mill, Bore-Horizontal (Automatic Tool Change)						
Y-axis Travel Less Than 27 Inches	92.2	106.7	72.3	29.9	46.8	37.2
Y-axis Travel 27 Inches to 40 Inches	64.1	88.3	66.4	26.3	34.5E	35.4E
Y-axis Travel Over 40 Inches	75.9	80.8	79.7	27.2	16.3E	6.7E
All Other Machining Centers (b)	28.2	30.4	18.1	35.1	20.7E	19.8E

p - Preliminary. r - Revised. E - Estimated by NMTBA.

(a) Included in "All Other Machining Centers."

(b) This item includes "All Other Machining Centers" and those items not disclosed due to confidentiality considerations, see footnote (a).

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF MILLING MACHINES

Units and Value, 1978 to Date

Products	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
UNITS								
TOTAL	14,602	15,553	17,098	17,193	7,737	7,247	7,981	8,299
Unit Value Under $2,500	D	1,693	1,640	1,349	921	1,036	450E	320
Unit Value $2,500 and Over	D	13,860	15,458	15,844	6,816	6,211	7,533E	7,979
Knee Type Milling Machines								
(Except Bench)								
Horizontal								
Plain								
Universal								
Vertical & All Other Knee	11,872	13,216	14,852	15,275	6,507	5,969	7,352E	7,793
Ram Type								
Bed Type Milling Machines	633							
Profile Machines and								
Duplicators	197	210	279	286				
Die Sinking Machines	D	229			309	242	179	186
All Other Milling Machines	114	205	327	283				
VALUE (Millions of Dollars)								
TOTAL	$194.3	$279.8	$339.3	$436.6	$265.6	$146.5	$179.9	$180.3
Unit Value Under $1,000(a)	D	1.0	1.0	1.0	0.6	0.8	1.1E	0.6
Unit Value $1,000 and Over(b)	D	278.9	338.3	435.6	265.0	145.7	178.8E	179.7
Knee Type Milling Machines								
(Except Bench)								
Horizontal								
Plain								
Universal								
Vertical and All Other Knee	111.6	174.1	215.1	231.3	109.3	98.4	118.8E	95.9
Ram Type								
Bed Type Milling Machines	28.9							
Profile Machines and								
Duplicators	14.9	66.9	96.8	157.3				
Die Sinking Machines	D	2.2			155.7	47.3	60.0	83.8
All Other Milling Machines	36.1	35.7	26.3	47.0				

E - Estimate by NMTBA. p - Preliminary. r - Revised. D - Withheld to avoid disclosure.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF MILLING MACHINES
Units and Value, 1981 to Date
(Millions of Dollars)

Products	1981	1982	1983	1984(r)	1985(p)
UNITS					
TOTAL	17,193	7,737	7,247	7,981	8,299
Valued under $2,500	1,349	921	1,036	450E	320
Valued at $2,500 and over	15,844	6,816	6,211	7,533E	7,979
General-purpose, knee or bed:					
Horizontal plain, universal and ram	14,071	5,850	5,445	D	D
Vertical, except ram					
Vertical ram					
All other general-purpose type milling machines					
Automatic and manufacturing:					
Single spindle	356	228	177	197	135
Multiple spindle and special-purpose machines	848	429	347	D	D
Profile machines and duplicators	286	309	242	179	186
Die sinking and engraving machines, drum type millers, pantograph millers, and cam millers	283				
All other milling machines N.E.C.					
VALUE (Millions of Dollars)					
TOTAL	$436.6	$265.6	$146.5	$179.9	$180.3
Valued under $2,500 each	1.0	0.6	0.8	1.1E	.6
Valued at $2,500 each and over:	435.6	265.0	145.7	178.8E	179.7
General-purpose, knee or bed:					
Horizontal plain, universal and ram	140.1	64.4	71.4	D	D
Vertical, except ram					
Vertical ram					
All other general-purpose type milling machines					
Automatic and manufacturing:					
Single spindle	37.3	21.9	7.6	10.9	5.9
Multiple spindle and special-purpose machines	53.9	22.9	19.3	D	0.0
Profile machines and duplicators	157.3	155.7	47.3	60.0	83.8
Die sinking and engraving machines, drum type millers, pantograph millers, and cam millers	47.0				
All other milling machines N.E.C.					

p - Preliminary. r - Revised. E - Estimated by NMTBA.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF METAL FORMING MACHINE TOOLS

Units and Value, 1978 to Date

Products	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
UNITS								
TOTAL	69,813	82,199	75,336	66,666	48,204	50,073	56,508	53,531
Punching, Shearing, Bending and Forming	43,903	47,805	46,017	40,602	29,738	31,251	34,981	33,376
Punching and Shearing (a)	4,774	5,745	5,396	5,423	3,736	2,784	3,164	3,736
Bending and Forming (a)	10,388	9,791	9,242	7,472	5,990	5,958	6,172	7,066
Presses, Including Forging(b)	16,655	24,418	20,428	18,030	11,765	9,665	10,747	9,140
Presses, Including Forging (a,b)	NA	7,432	5,764	4,123	3,147	2,419	2,655	2,631
Other Metal Forming Machine Tools	9,255	9,976	8,891	8,034	6,701	9,157	10,780	11,015
VALUE (Millions of Dollars)								
TOTAL	$808.2	$1,026.8	$1,096.0	$1,064.3	$863.6	$580.6	$710.4	$828.9
Punching, Shearing, Bending and Forming	294.3	364.6	419.1	418.9	308.8	258.7	307.2	340.1
Punching and Shearing(a)	141.3	174.3	196.7	198.1	136.5	114.2	132.4	155.1
Bending and Forming(a)	139.0	171.2	202.6	200.5	156.5	127.0	155.5	166.5
Presses, Including Forging(b)	350.9	434.0	440.8	429.6	344.8	160.8	212.4	253.6
Presses, Including Forging(a,b)	NA	422.1	429.9	418.6	338.3	156.1	207.2	249.5
Other Metal Forming Machine Tools	163.7	228.2	236.1	215.8	210.0	161.1	190.9	235.2

p - Preliminary. NA - Not Available. r - Revised.

(a) Machine tools under $2,500 are not included so the individual items do not add to the totals.
(b) Excludes Forging.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF HYDRAULIC AND PNEUMATIC METALWORKING PRESSES

Units and Value (a), 1978 to Date

Products	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
UNITS								
Hydraulic and Pneumatic Presses								
Vertical Single Action								
Housing or Straight Side Type	NA	87	78	39	82	55	53	43
Column Type	174	433	443	347	268	141	205	236
Open Rod Type	392	(b)	(b)	(b)	(b)	D	D	D
Gap or C-Frame								
15 Tons and Under	673	571	546	483	450	366	131	83
16-35 Tons		58	63	55	99		29E	55
Over 35 Tons		166	140	98			49	70
Verticle Multiple Action, All Tonnages, Extrusion and Horizontal Presses	D	34	1,137	702	569	D	D	601
All Other Hydraulic Presses	1,363	1,871						
VALUE (Millions of Dollars)								
Hydraulic and Pneumatic Presses								
Vertical Single Action								
Housing or Straight Side Type	NA	$18.7	$16.7	$16.3	$30.0	$12.1	$ 9.8	$ 9.4
Column Type	$16.2	9.2	11.7	8.5	7.3	7.4	12.4	9.3
Open Rod Type	9.4	(b)	(b)	(b)	(b)	D	D	D
Gap or C-Frame								
15 Ton and Under	7.4	4.9	5.2	4.6	9.3	4.3	1.5	2.2
16-35 Tons		1.3	1.5	1.6	4.8		0.9E	1.6
Over 35 Tons		7.8	6.7	4.9			4.5	4.9
Verticle Multiple Action, All Tonnages, Extrusion and Horizontal Presses	D	12.8	45.8	50.0	53.8	D	D	31.2
All Other Hydraulic Presses	32.1	30.7						

p - Preliminary. D - Withheld to avoid disclosure. r - Revised. E - Estimate by NMTBA. NA - Not Available.

(a) Unit value $2,500 or over.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery."

SHIPMENTS OF MECHANICAL PRESSES

Units and Value (a), 1978 to Date

Products	1978	1979	1980	1981	1982(r)	1983(r)	1984(p)	1985(p)
UNITS								
Open Inclinable Gap Type								
50 Tons and Under	2,140	1,374	954	642	433	435	496	609
51 Tons to 120 Tons	929	1,000	717	444	255	205	289	243
120 Tons and Over		96	103	87	D	D	D	
Vertical Straight-sided and Arch Frame								
Single Action								
Single Point								
200 Tons and Under	68E	59	57	90	D	D	D	176
201 to 300 Tons								
301 Tons and Over								
Two Point								
300 Tons and Under	285	313	244	154	137	D	152	
301 Tons and Over	116	97	77	[illegible]				
Automatic High Speed								
50 Tons and Under	228	622	575	389	327	310	471	328
51 Tons and Over	D							
Gap and Horn Type	306	322	352	242	162	52	D	67
Bulldozers and Transfer Feed Presses	97	329	278	305	296	105	129	120
All Other Mechanical Presses								
VALUE (Millions of Dollars)								
Open Inclinable Gap Type								
50 Tons and Under	$16.0	$20.0	$15.9	$13.4	$ 9.6	$ 7.9	$ 9.2	$ 9.7
51 Tons to 120 Tons	29.3	32.4	27.5	19.1	11.0	8.0	14.0	14.1
120 Tons and Over		6.4	7.6	8.0	D	D	D	
Vertical Straight-sided and Arch Frame								
Single Action								
Single Point								
200 Tons and Under	12.8E	13.9	13.2	20.7	D	D	D	50.9
201 to 300 Tons								
301 Tons and Over								
Two Point								
300 Tons and Under	24.3	26.7	31.3	25.5	43.1	D	27.4	
301 Tons and Over	41.8	43.5	48.1	39.4				
Automatic High Speed								
50 Tons and Under	13.4	76.5	83.7	72.2	47.6	34.9	65.2	58.7
51 Tons and Over	D							
Gap and Horn Type	9.7	9.2	10.0	5.6	4.5	2.1	D	4.7
Bulldozers and Transfer Feed Presses	30.5	108.1	104.9	129.0	103.3	21.3	24.7	52.9
All Other Mechanical Presses								

p - Preliminary. E - Estimated by NMTBA. D - Withheld to avoid disclosure. r - Revised.

(a) Unit value $2,500 or over.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF PUNCHING, SHEARING, BENDING AND FORMING MACHINES

Units and Value (a), 1978 to Date

Products	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
UNITS								
Punching and Shearing Machines								
Power operated:								
Punches, Including Combination Punching and Shearing	1,575	2,387	2,300	2,512	1,870	1,112	1,293	1,667
Punching Machines, Fixed Position & Two Axes Positioning Table	768	938	822	678	407	392	516	487
Plate Shearing Machines	1,318	1,613	1,481	1,352	942	875	906	1,144
Bar and Angle, and Rotary Shearing Machines	339	275	186	186	152	133	108	99
Other Power Operated Punching and Shearing Machines	551	527	607	695	365	272	341	339
Manually Operated Punching and Shearing Machines	223							
Bending and Forming Machines								
Bending Rolls, Sheet and Plate (Power)	417	657	503	409	262	259	265	293
Bending Rolls, Angles, Bars and Shapes (Power)	1,847		231	300	116	D	(e)	D
Press Brakes and Folders (Power) (d)		(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mechanical		588	824	548	415	574	371	1,035
Hydraulic		856	1,540	904	612	599	799	641
Hydro-Mechanical		622		350	262	D	314	D
Rotary Bending and Forming (Power)	2,334	1,655	1,275	1,200	1,051	1,483	1,675	1,979
Rotary Head and Ram Bending (Power)	1,588	1,487(c)	1,287(c)	1,017(c)	819(c)	360(c)	347(c)	D(c)
Other Bending and Forming Machines (Power or Manual)	4,202	3,926	3,582	2,744	2,453	2,435	2,401	2,474
VALUE (Millions of Dollars)								
Punching and Shearing Machines								
Power operated:								
Punches, Including Combination Punching and Shearing	$14.0	$20.8	$21.7	$26.0	$21.4	$16.3	$15.6	$15.7
Punching Machines, Fixed Position & Two Axes Positioning Table	64.6	81.4	95.1	84.8	45.7	48.5	72.2	67.0
Plate Shearing Machines	46.6	53.6	61.0	65.9	55.2	40.8	38.9	60.3
Bar and Angle, and Rotary Shearing Machines	2.6	3.3	1.6	3.0	1.8	2.0	1.0	.7
Other Power Operated Punching and Shearing Machines	13.0	15.2	17.4	18.3	12.3	6.6	5.8	11.5
Manually Operated Punching and Shearing Machines	.6							
Bending and Forming Machines								
Bending Rolls, Sheet and Plate (Power)	9.4	34.1	24.2	25.7	13.9	5.7	6.0	8.5
Bending Rolls, Angles, Bars and Shapes (Power)	52.9		13.1	15.9	13.3	D	(e)	D
Press Brakes and Folders (Power) (d)		(b)	(b)	(b)	(b)	(b)	(b)	(b)
Mechanical		10.8	15.2	12.5	7.7	11.1	8.6	10.4
Hydraulic		30.0	50.8	40.7	28.0	20.3	37.9	29.0
Hydro-Mechanical		10.0		9.1	5.8	D	7.1	D
Rotary Bending and Forming (Power)	19.7	19.3	26.4	23.6	24.4	22.3	39.3	30.8
Rotary Head and Ram Bending (Power)	14.9	16.1(c)	14.3(c)	15.1(c)	11.4(c)	8.5(c)	7.6(c)	D(c)
Other Bending and Forming Machines (Power or Manual)	42.1	51.0	58.6	57.9	52.1	41.7	49.0	60.0

D - Withheld to avoid disclosure. p - Preliminary. r - Revised.

(a) Unit value $2,500 or over.
(b) Folders included in Other.
(c) Ram and Press Bending Only, Rotary Head is a part of Rotary Bending and Forming.
(d) The detail for press brakes is not available prior to 1979.
(e) Included in "Rotary Bending & Forming (Power)."

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

SHIPMENTS OF FORGING AND OTHER METAL FORMING MACHINE TOOLS

Units and Value (a), 1978 to Date

Products	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
UNITS								
Forging Machines	533	609	631	479	383	263	198	230E
Riveting Machines (Except Portables)	3,346	3,246	2,025	1,764	1,320	1,592	1,759	1,972
Thread Rolling Machinery	232	233	202	150	111	80	160	257
Die Casting Machines								
Under 500 Tons	NA	90	123	112	75	102	170	167
501 Tons and Over	NA	136	94	56	31			
Spinning Lathes	D	2,851	2,766	2,326	1,939	1,808	2,357	2,021
Marking Machines, Knurling Machines								
Electroforming & Others	2,568							
Metal Container Making Machines					1,349	1,105	949	806
VALUE (Millions of Dollars)								
Forging Machines	$59.3	$84.7	$73.8	$79.0	$79.0	$48.0	$29.0	$34.5E
Riveting Machines	13.7	15.8	21.9	24.3	14.6	12.7	18.5	26.1
Thread Rolling Machinery	8.3	9.4	8.9	8.5	7.2	5.0	12.3	19.2
Die Casting Machines								
Under 500 Tons	NA	7.6	12.4	11.5	8.0	18.4	38.0	44.9
501 Tons and Over	NA	30.9	27.1	15.1	8.7			
Spinning Lathes	D	75.3	88.0	73.1	46.1	35.2	44.3	50.4
Marking Machines, Knurling Machines								
Electroforming & Others	72.1							
Metal Container Making Machines					44.0	37.2	43.1	54.4

NA - Not Available. D - Withheld to avoid disclosure. p - Preliminary. r - Revised. E-Estimate.

(a) Unit value $2,500 or over.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

INDUSTRIES MANUFACTURING MACHINE TOOLS

Value of Shipments, by Industry, by Type, 1977 and 1982

(Millions of Dollars)

	All Industries		Shipped by					
			Metal Cutting Machine Tool Industry	Metal Forming Machine Tool Industry	Special Dies, Tools Jigs, & Fixtures Industry	Machine Tool Accessories Industry	Metal Working Machinery N.E.C. Industry	
			SIC 3541	SIC 3542	SIC 3544	SIC 3545	SIC 3549	Other Industries
	1977	1982	1982					
Metal Cutting Machine Tools								
Total	$2,561	$4,155	$3,877	$25	$ 4	$75	$31	$143
Boring Machines	94	199	194	—	D	D	D	D
Drilling Machines	109	67	53	D	—	D	D	D
Gear Cutting & Polishing	67	87	D	—	—	D	—	—
Grinding & Polishing	288	515	469	1	—	D	D	D
Lathes	456	524	515	D	D	D	D	D
Milling Machines	168	265	251	10	—	D	D	D
Other Machine Tools (a)	714	1,437	1,328	D	D	D	D	D
Parts Sold Separately (b)	502	892	824	7	2	20	6	34
Not Specified	163	169	D	—	—	—	—	D
Metal Forming Machine Tools								
Total	$1,115	$1,384	$ 43	$1,211	$ 9	$ D	$ D	$ D
Punching, Shear, Bending, and Forming Machines	280	317	D	287	D	—	4	D
Presses, incl. Forging Presses(c)	283	369	10	331	D	D	D	D
Other Metal Forming Tools	172	217	D	177	D	D	D	D
Parts & Rebuilt Machines	296	380	15	317	3	D	4	D
Not Specified	85	101	—	98	—	—	D	D

D - Withheld to avoid disclosure. N.E.C. - Not elsewhere classified.

(a) Includes machine tools for home workshops, laboratories, etc.
(b) Includes rebuilt machine tools.
(c) In 1982, Forging Presses are included in "Other Metal Forming Tools."

Source: U.S. Bureau of the Census, "Census of Manufactures 1982; MC82(2)-35C" and earlier issues.

Machine tools are "primary products" of the metal cutting and metal forming machine tool industries (SIC 3541 and 3542). However, other industries also manufacture machine tools as "secondary products." In turn, the machine tool industry produces some products other than machine tools.

MILITARY PRIME CONTRACT AWARDS FOR MACHINE TOOLS

Fiscal Years 1982 to Date

(Thousands of Dollars)

	Year ending June 30			
	1982	1983	1984	1985
Saws and filing machines	$ 2,339	$ 2,055	$ 2,649	$ 1,965
Machining centers and way type machines	10,035	14,981	22,485	19,171
Electrical and ultrasonic erosion machines	801	1,169	1,320	1,645
Boring machines	7,741	4,527	6,249	8,324
Broaching machines	12	5,000	5,675	68
Drilling machines and tapping machines	8,556	2,247	5,309	2,433
Gear cutting and finishing machines	151	661	269	435
Grinding machines	7,336	8,836	14,682	18,662
Lathes	15,003	22,220	27,241	17,796
Milling machines	9,805	11,963	10,372	12,630
Planers and shapers	908	123	242	660
Miscel. machine tools	4,416	5,799	5,755	3,616
Total metal cutting machine tools	$ 67,103	$ 79,581	$102,248	$ 87,405
Bending and forming machines	$ 5,338	$ 4,022	$ 3,548	$ 7,410
Hydraulic and pneumatic presses	1,938	1,931	8,117	1,367
Mechanical presses, power driven	761	1,213	356	940
Manual presses	476	474	2,400	670
Punching and shearing machines	3,653	3,288	3,617	5,627
Forging machinery and hammers	1,041	2,616	1,479	289
Wire and metal ribbon forming machines	42	80	119	0
Riveting machines	220	46	54	358
Miscel. secondary forming & cutting mach.	−48,489	−45,108	192	424
Total metal forming machine tools	$−35,020	$−31,438	$ 19,882	$ 17,085
Total Machine Tools	$ 32,083	$ 48,143	$122,130	$104,490

Source: Department of Defense, OASD (Comptroller), "Military Prime Contract Awards, by Service Category and Federal Supply Classification."

5

U.S. MACHINE TOOL FOREIGN TRADE

Foreign trade in machine tools has been a fact of life in the world's metalworking markets since the beginning of the industrial era. As a preeminent producer, the U.S. machine tool industry has historically exported around 15% of its annual output. However, in recent years the U.S. industry's position as an export leader has been challenged by competitors from other industrial nations and from developing nations. As a result of the combined effects of the the decline in the dollar, and the gradual economic recovery in the industrialized nations, U.S. machine tool exports have slowly turned around since 1984. Imported foreign machine tools have continued to increase their penetration of the U.S. market registery record levels of imports in both 1984 and 1985.

After having peaked at a value of over $1 billion in 1981, U.S. exports of machine tools fell to $615 million in 1982, fell again to $406 million in 1983, and registered only slight gains in 1984 to $409 million and 10% increase in 1985 to $453 million. Imports also declined during this time period, but by 1984 had rebounded to near the 1981 record level. After reaching a record high of $1.49 billion in 1981, imports fell to $1.25 billion in 1982, declined again to $946 million in 1983, but then registered a strong turnaround in 1984, rising 43% to $1.36 billion. In 1985 imports rose an additional 28% to set a new record high of $1.74 billion. Since imports rose far more rapidly than domestic shipments during 1985, the share of domestic market taken by imports continued to climb. From a level of 25% in 1981, the imports' share of American machine tool consumption had risen to 41% for 1985.

As a result of the rapid growth of imports, the machine tool trade deficit reached a new record high in 1985. Standing at $635 million for 1982 and a slightly lower $540 million for 1983, the deficits for both years exceeded the total value of U.S. machine tool exports for the first time in the industry's history. These deficits, however, pale in comparison to 1985's deficit of $1.3 billion; a 138% increase over 1983, a 103% over 1982 and a deficit that is 36% larger than the previous record in 1984. These deficits underscore the intensity of the international competitive pressures being felt by U.S. machine tool builders and bring into focus the reality of the world machine tool marketplace. Reestablishing its position in this world market is vital to the future of the U.S. machine tool industry.

United States Foreign Trade Statistics

The most widely used data on foreign trade are the Census Bureau reports on exports and imports. Exports and imports are compiled from copies of the shipper's own declaration filed with U.S. Customs officials. Export values are those declared by the shipper at the time of exportation. Freight, insurance, and other charges are included, thus giving exports a value higher than that of the machine tool at the manufacturer's plant.

The Census data include shipments by manufacturers and by others such as dealers and distributors. They also include exports of rebuilt machine tools, replacement parts, and machine tools designed for use in home workshops, laboratories, garages, service shops, or for modelmaking.

While the Census export figures tend to show a value higher than the value of the machines at the manufacturer's plant, import figures show values considerably lower than those paid by the purchaser of foreign machine tools. Values are, in general, based on the market value, or price, in the foreign country at the time of exportation and include the cost of containers and coverings as well as other charges and expenses incidental to placing the merchandise into condition for shipment to the United States. However, they exclude import duties, insurance, ocean freight, and other charges incidental to the arrival of the goods in the United States.

As a result of these and other factors inflating the "value" of the exports and deflating the "value" of the imports, the impact of imports is greater than that shown in most tables in this chapter. The negative balance of trade, correspondingly, is larger than shown.

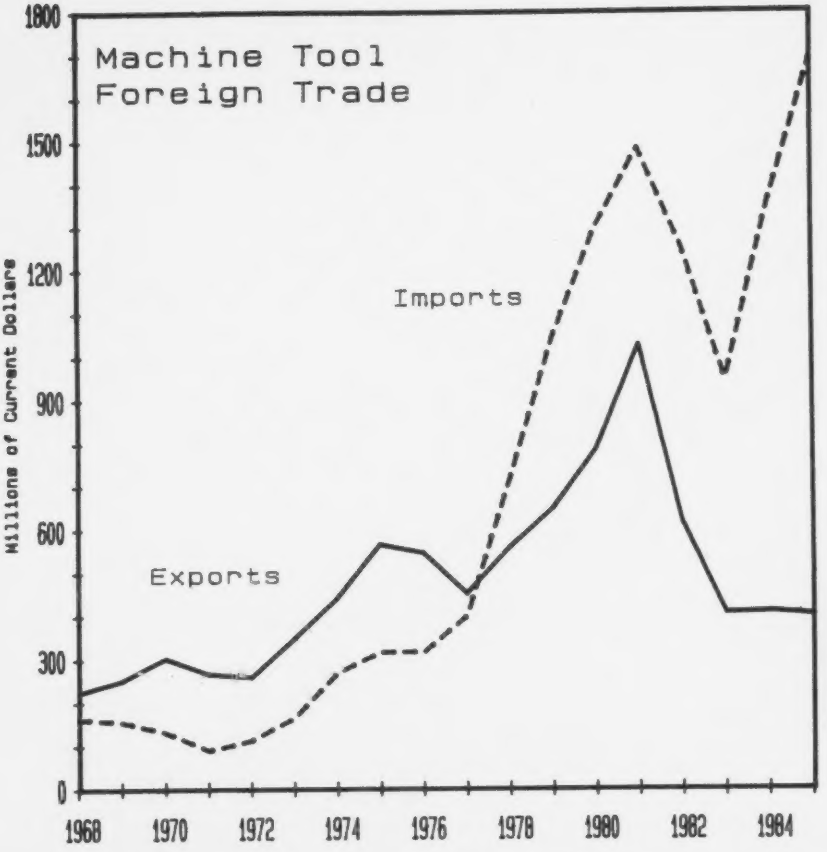
There are two additional export series with a more limited scope but considered more accurate by the industry.

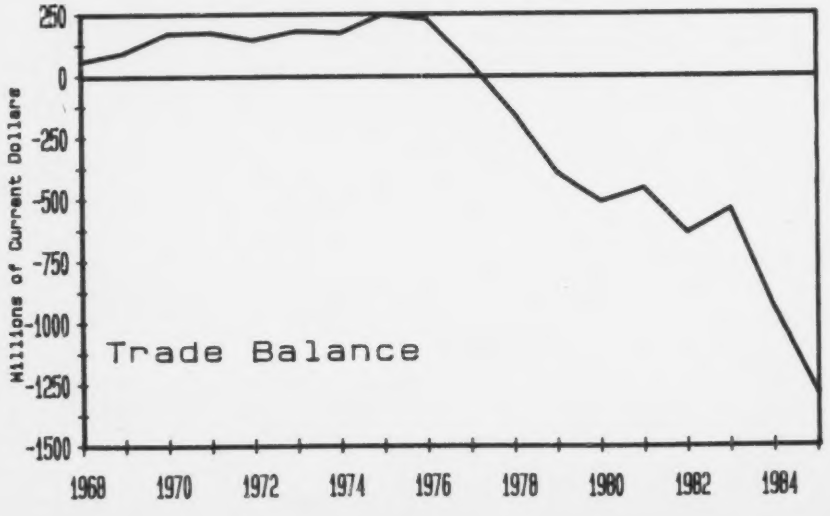
The first is a series on foreign orders and shipments that is part of the NMTBA "Industry Estimates of New Orders, Cancellations, Shipments, and Backlog," published monthly for the entire industry (see Chapter 4 for details on this report).

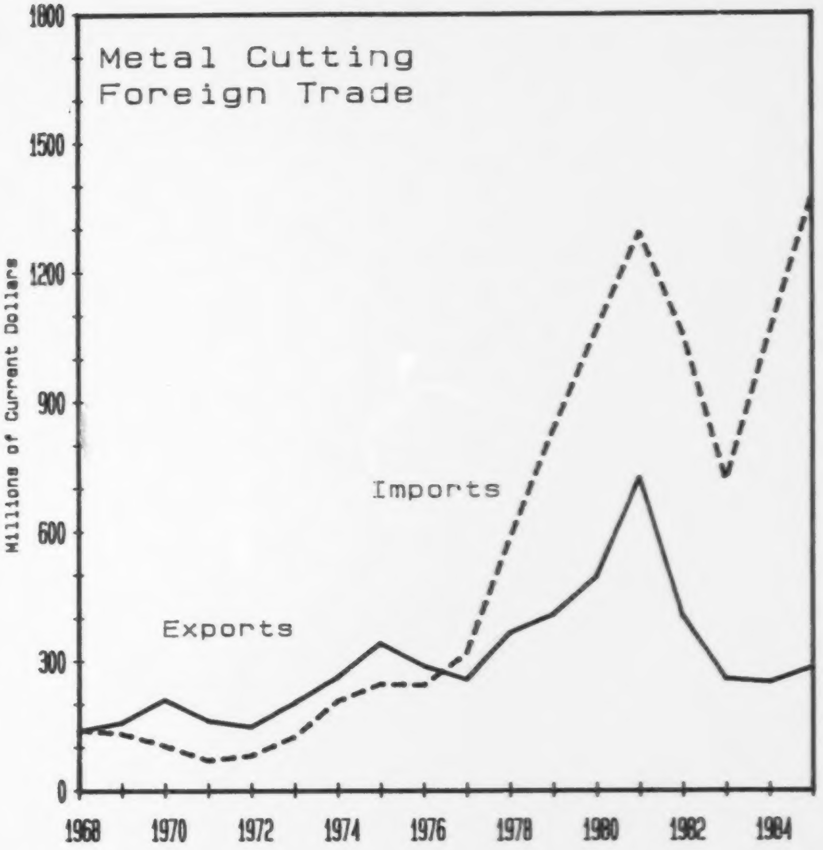
The other is the series on exports, based on manufacturers' shipments for export, published in the MQ-35W series by the Department of Commerce (see Chapter 4 for details). This report shows manufacturers' shipments of new and complete machine tools for 12 major machine tool categories. It also shows the historical quantity and value of exports for about 15 selected types of machine tools through 1972, but only the value of exports from 1973 forward.

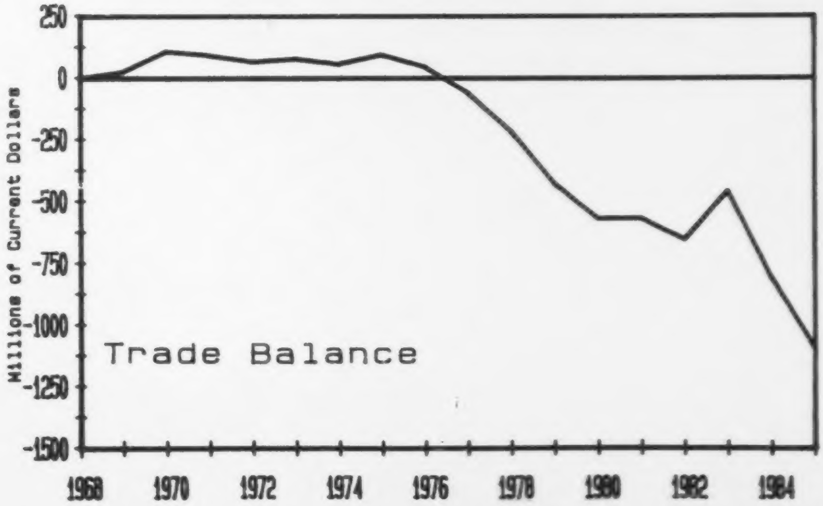
The two major reasons the Census data are the most widely used in spite of their shortcomings are that (1) the Census series on imports is the only one available, and (2) the two Census series on exports and imports include a similar broad "universe" (new, used, and rebuilt machines and home-workshop type machine tools).

Beginning with 1980 data, the commodity descriptions and classification numbers for machine tools were revised. Although the machine tool categories differ slightly, the resulting TSUSA import and Schedule B export classification codes are comparable and permit direct comparisons of foreign trade by product types. Foreign trade data are also comparable to U.S. production data (MQ-35W, See Chapter 4), permitting the calculation of U.S. consumption of machine tools for a variety of product types.


Machine Tool
Foreign Trade
Imports
Exports
Millions of Current Dollars
1800
1500
1200
900
600
300
0
1968
1970
1972
1974
1976
1978
1980
1982
1984


Trade Balance
Millions of Current Dollars
250
0
-250
-500
-750
-1000
-1250
-1500
1968
1970
1972
1974
1976
1978
1980
1982
1984


Metal Cutting
Foreign Trade
Imports
Exports
Millions of Current Dollars
1800
1500
1200
900
600
300
0
1968
1970
1972
1974
1976
1978
1980
1982
1984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Millions of Current Dollars
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-750
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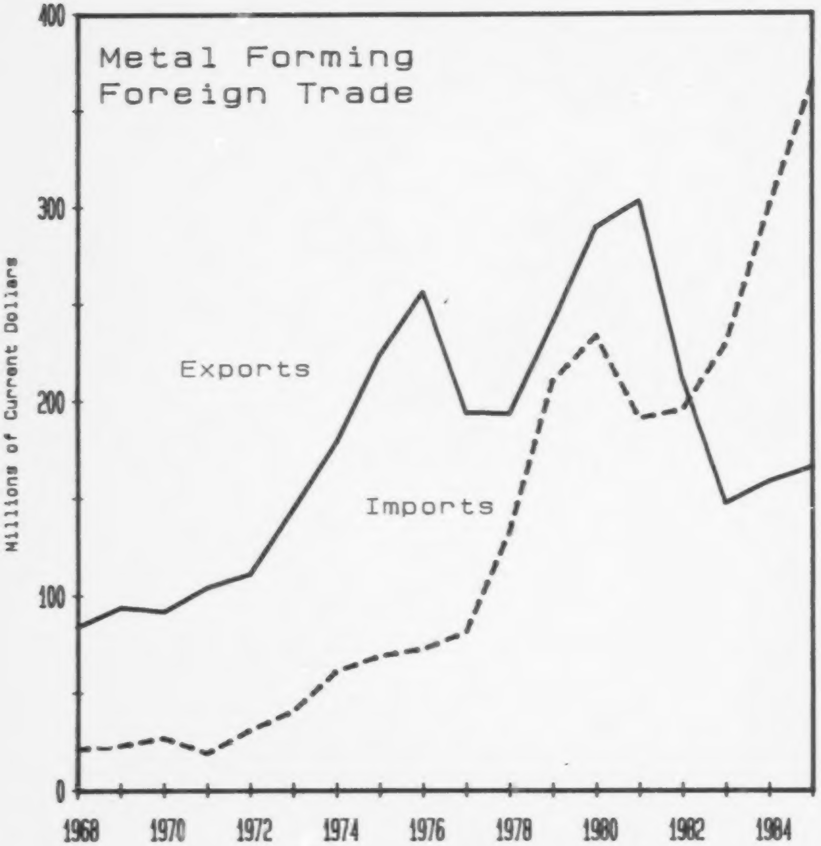
1968
1970
1972
1974
1976
1978
1980
1982
1984


Metal Forming
Foreign Trade
Exports
Imports
Millions of Current Dollars
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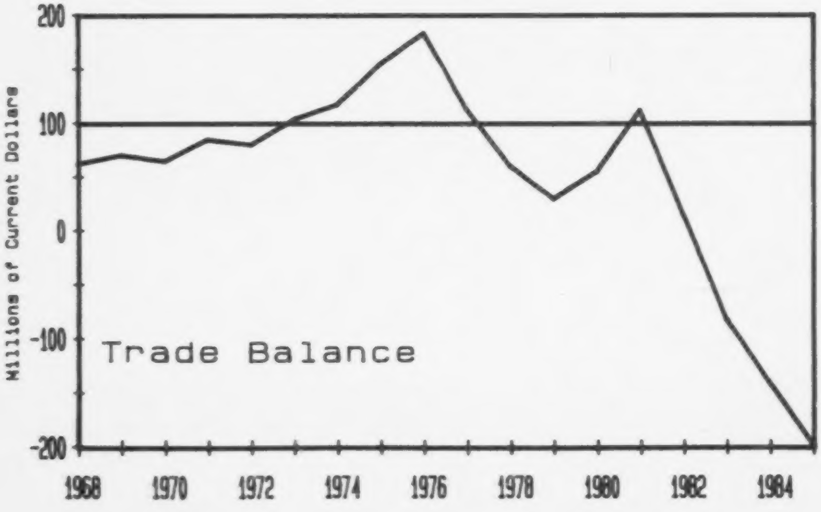
300
200
100
0
1968
1970
1972
1974
1976
1978
1980
1982
1984


Trade Balance
Millions of Current Dollars
200
100
0
-100
-200
1968
1970
1972
1974
1976
1978
1980
1982
1984

U.S. MACHINE TOOL IMPORTS AS A PERCENTAGE OF U.S. MACHINE TOOL CONSUMPTION

By Type of Complete Machines Valued Over $2,500 (a), 1977 to Date

Machine Classification	1977	1978	1979	1980	1981	1982	1983	1984(r)	1985(p)
Machine Tools	16.8	20.6	22.6	23.3	24.9	26.4	33.7	38.1	40.9
Metal Cutting	17.5	21.6	23.0	23.6	26.1	27.4	33.6	38.8	43.0
Boring Machines	34.2	39.3	26.0	25.0	29.3	25.2	29.4	30.5	40.0
Drilling Machines	19.8	13.8	18.8	15.7	21.7	33.3	31.6	52.7	58.6
Gearcutting Machines	28.8	31.7	32.9	29.8	31.1	28.1	36.7	41.9	39.5
Grinding Machines	NA	NA	NA	23.4	22.6	22.6	28.9	30.1	29.9
Lathes	24.0	33.1	37.3	36.0	41.3	45.9	38.6	51.4	57.7
Milling Machines	16.8	22.6	24.5	30.2	23.9	26.5	28.5	34.8	45.5
Machining Centers	NA	NA	11.3	20.8	31.3	36.9	49.3	56.0	62.6
Metal Forming	14.7	17.4	21.1	22.1	19.4	22.5	33.8	36.0	34.9
Punching & Shearing Machines	NA	NA	NA	23.3	25.7	34.6	27.5	43.6	36.7
Bending & Forming Machines	NA	NA	NA	17.5	16.3	20.7	24.5	29.7	35.3
Presses	NA	NA	NA	16.0	11.6	12.4	29.3	29.9	28.5
Forging Machines	NA	NA	NA	28.5	21.5	25.3	49.8	55.3	34.1
Total NC Machines	NA	NA	NA	23.4	32.7	35.1	38.4	48.4	53.3

NA - Not Available. p - Preliminary. r - Revised.

(a) Based on shipments of complete machine tools with values greater than $1,000 for 1976-1977 and $2,500 for 1978 to date.

Sources: U.S. Dept. of Commerce: "Current Industrial Reports, Series MQ-35W, Metalworking Machinery", and U.S. Bureau of the Census, "IM 146" and "EM 522."

UNITED STATES PRODUCTION, IMPORTS, EXPORTS, AND DOMESTIC CONSUMPTION OF NEW COMPLETE MACHINE TOOLS (a), 1963 to Date

(Thousands of Dollars)

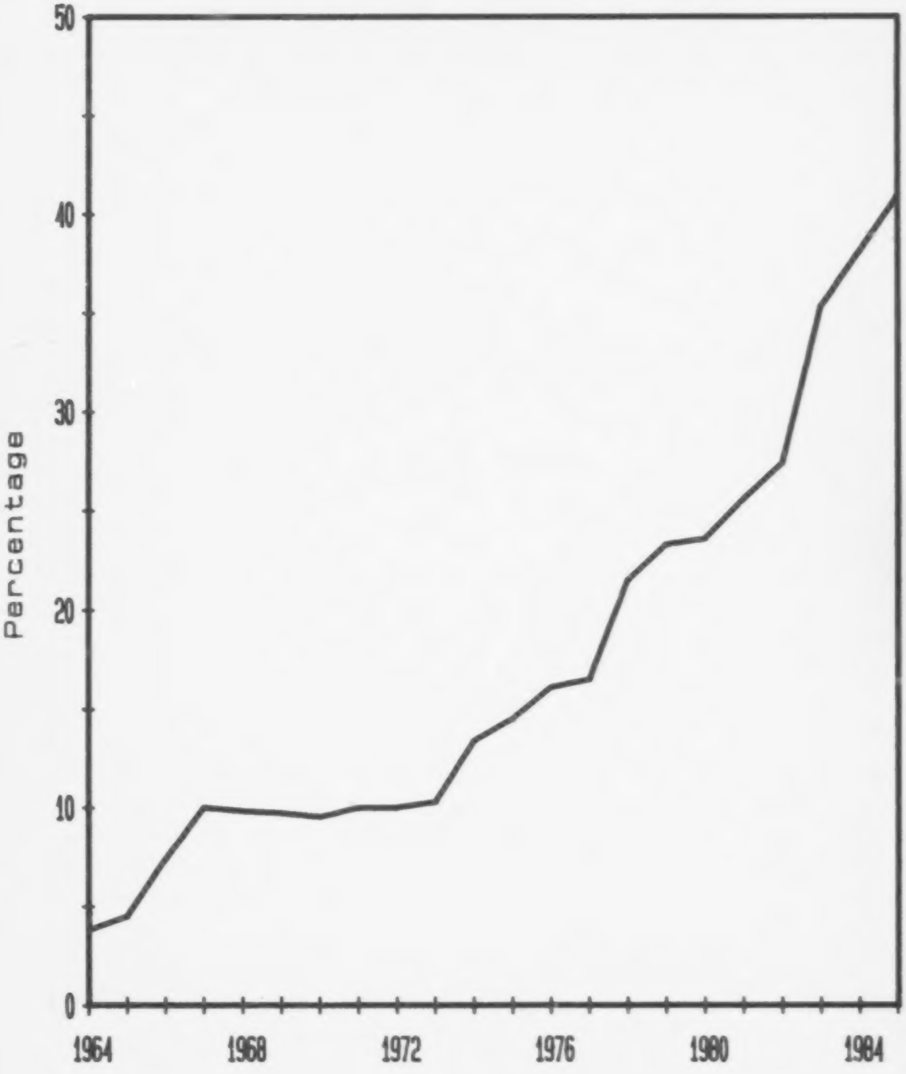
Year	Production	Exports	Imports	Domestic Consumption
1963	$ 946,083	$ 185,443	$ 37,679	$ 798,319
1964	1,185,380	254,511	36,364	967,233
1965	1,429,650	222,437	56,293	1,263,506
1966	1,680,014	208,909	117,748	1,588,853
1967	1,826,432	224,672	178,205	1,779,965
1968	1,722,727	216,552	163,576	1,669,751
1969	1,692,188	242,427	156,122	1,605,883
1970	1,551,777	292,086	131,826	1,391,517
1971	1,057,870	251,532	90,085	896,423
1972	1,269,302	238,135	113,998	1,145,165
1973	1,787,850	325,494	167,057	1,629,413
1974	2,165,937	410,510	270,740	2,026,167
1975	2,406,082	536,659	317,578	2,187,001
1976	2,178,265	514,942	318,304	1,981,627
1977	2,453,423	426,729	400,904	2,427,598
1978	3,142,594	533,094	715,282	3,324,782
1979	4,064,045	619,111	1,043,768	4,488,702
1980	4,812,349	734,135	1,259,802	5,338,016
1981	5,111,253	949,553	1,431,457	5,593,157
1982	3,804,250	574,567	1,217,718	4,447,401
1983(r)	2,144,849	359,037	921,083	2,706,895
1984(r)	2,423,263	373,457	1,318,964	3,368,770
1985(p)	2,729,330	400,453	1,688,693	4,017,570

p - Preliminary. r - Revised.

(a) Production figures are those reported by domestic manufacturers in the MQ-35W. Import and export figures are taken from the Department of Commerce's "IM 146" and "EM 522" reports. These figures reflect data for machine tools of all values but do not include the value of used and rebuilt machines.

Source: NMTBA, "Current Industrial Reports; Metalworking Series, MQ-35W", U.S. Department of Commerce Trade Statistics.

U.S. Machine Tool Imports as a Percentage of U.S. Machine Tool Consumption



The government import statistics used on this and the previous page represent machine tool values in the originating foreign country. They exclude import duties, freight insurance and other charges incurred in bringing the machines to the United States and thus understate the imports' actual cost. A conservative adjustment reflecting these value-adding charges results in a slightly higher proportion of U.S. consumption being accounted for by imports. For example, the adjusted 1984 import share of U.S. machine tool consumption was 44.3% as compared with an unadjusted share of 38.0%.

U.S. IMPORTS OF MACHINE TOOLS (a)
Major Countries of Origin, 1974 to Date
(Millions of Dollars)

Country of Origin	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
TOTAL	$270.7	$317.6	$318.3	$400.9	$715.3	$1,043.8	$1,298.5	$1,482.9	$1,253.3	$946.5	$1,356.6	$1,738.5
Austria	1.8	3.2	2.0	1.0	2.3	3.7	2.3	2.1	15.8	30.0	4.2	7.5
Belgium	5.3	6.4	3.1	4.9	8.0	12.6	16.7	18.5	9.1	7.1	6.7	10.3
Czechoslovakia	2.6	2.8	3.5	2.9	3.9	4.6	5.7	4.7	2.0	.6	1.7	.5
Denmark	1.4	1.1	1.0	.7	2.5	3.3	3.7	2.9	2.2	2.8	5.2	4.7
France	13.4	16.2	9.5	9.7	17.4	21.4	24.9	26.5	12.9	10.5	13.9	19.2
Germany (East)	.3	.6	.8	.7	1.8	1.9	2.0	2.9	3.1	2.1	1.5	1.4
Germany (West)	78.0	96.0	93.3	91.2	154.8	197.0	235.9	192.3	204.6	125.7	205.7	248.9
Italy	16.8	15.5	14.6	15.1	25.4	37.5	44.1	42.9	45.0	49.3	51.3	76.6
Netherlands	2.4	1.3	1.1	1.9	2.7	5.5	6.1	4.9	2.6	5.7	9.0	11.2
Norway	.6	.4	.1	.6	.4	.6	.3	.8	1.0	.1	9	1.5
Poland	5.2	2.2	2.8	7.2	12.8	19.2	15.6	15.8	7.5	2.1	1.0	2.2
Spain	6.8	6.4	6.9	7.7	13.4	20.6	27.1	24.3	20.6	11.6	16.2	19.8
Sweden	8.9	9.9	8.4	11.5	18.3	31.3	29.3	28.3	23.4	15.3	19.2	29.0
Switzerland	29.3	27.0	28.6	35.3	57.6	66.0	81.5	78.4	71.8	54.7	78.4	95.2
United Kingdom	31.0	39.3	32.0	46.1	74.9	96.9	117.3	136.1	107.5	66.4	74.7	93.5
Canada	12.7	15.0	14.9	19.2	27.0	34.2	47.9	44.0	36.6	29.4	40.8	61.2
Japan	47.4	62.6	67.3	105.7	220.6	353.3	492.0	687.5	529.2	414.9	683.3	854.1
Taiwan	2.4	2.7	13.0	22.6	48.8	85.7	93.6	102.4	90.9	83.4	99.2	134.2
Other Countries	4.4	8.8	15.4	16.9	22.5	48.5	52.5	67.6	67.5	34.8	43.7	67.5

(a) Data does not include parts, but does include "Used and Rebuilt."

Note: Individual items may not add to totals due to rounding.

Source: U.S. Department of Commerce, Bureau of the Census, "IM 146."

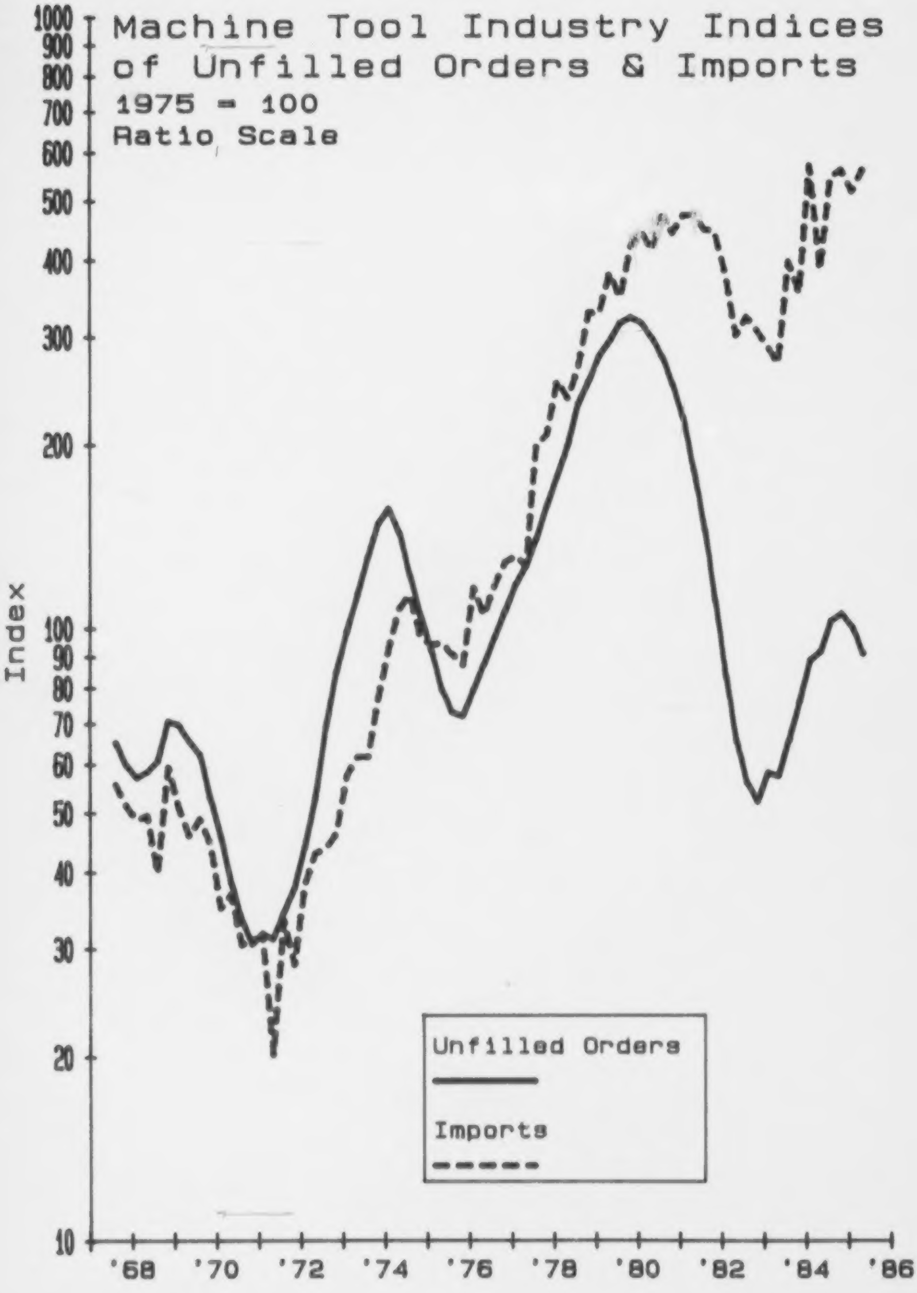
U.S. IMPORTS OF CUTTING AND FORMING MACHINE TOOLS (b)
Major Countries of Origin, 1974 to Date
(Millions of Dollars)

Country of Origin	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
CUTTING TOTAL	$209.1	$248.1	$245.3	$319.2	$582.2	$833.1	$1,064.4	$1,291.5	$1,057.4	$716.9	$1,056.7	$1,374.7
Austria	1.3	1.6	1.9	1.0	1.8	2.6	1.4	2.0	3.1	4.2	2.6	6.2
Belgium	1.7	2.6	1.2	4.3	4.5	6.2	8.0	10.8	5.6	3.0	.5	3.4
Czechoslovakia	2.6	2.8	3.5	2.9	3.9	4.4	5.5	4.6	2.0	.6	1.7	.5
Denmark	.7	.6	.9	.5	1.8	1.5	2.4	1.3	1.2	1.4	2.8	2.8
France	11.6	14.9	7.8	9.7	13.8	17.5	22.3	20.6	9.3	6.6	8.5	12.7
Germany (East)	.3	.6	.7	.7	1.6	1.8	1.9	2.9	3.1	2.0	1.5	1.3
Germany (West)	53.0	69.0	59.7	60.3	104.0	117.0	150.2	148.4	155.0	91.6	137.1	186.7
Italy	11.6	11.3	11.3	11.1	19.6	23.9	34.2	31.6	36.5	21.4	38.5	45.3
Netherlands	1.9	1.0	1.0	1.0	2.4	4.3	5.4	4.3	2.1	2.6	5.9	7.4
Poland	5.0	2.2	2.8	7.2	12.6	19.1	15.5	15.8	7.5	2.0	1.0	2.2
Spain	6.4	6.0	6.2	7.3	13.0	18.9	24.3	21.9	19.0	9.5	13.6	17.9
Sweden	7.8	7.5	7.0	9.6	12.9	21.7	19.9	19.9	14.9	7.7	11.9	15.3
Switzerland	23.1	20.9	22.5	28.1	47.7	53.9	65.9	65.4	61.1	40.5	66.1	76.3
United Kingdom	26.6	34.2	27.8	39.2	64.0	86.7	103.8	120.5	94.1	56.6	60.8	67.1
Canada	7.7	8.5	8.9	11.0	16.2	18.1	29.1	28.2	22.4	12.7	17.2	30.4
Japan	41.0	53.1	54.8	89.1	193.7	305.9	433.4	627.4	467.8	340.0	550.6	721.4
Taiwan	2.4	2.7	12.8	22.5	47.9	85.3	93.1	101.6	89.9	82.4	97.3	130.4
Other Countries	3.9	8.6	14.5	13.7	20.6	44.3	48.1	64.3	62.8	31.9	38.8	47.4
FORMING TOTAL	$41.1	$61.6	$69.4	$73.0	$81.7	$210.7	$234.1	$191.4	$196.0	$229.5	$299.9	$363.8
Austria	.2	.5	1.6	.1	(a)	1.1	.9	.1	12.8	25.7	1.5	1.3
Belgium	.7	3.6	3.8	1.9	.5	6.4	8.7	7.7	3.5	4.1	6.2	6.9
Germany (West)	16.3	25.0	27.0	33.6	30.9	80.1	85.7	44.0	49.6	34.1	68.6	62.2
France	1.2	1.8	1.4	1.7	2.4	4.0	2.5	5.9	3.6	3.9	5.4	6.5
Italy	3.2	5.2	4.2	3.2	4.0	13.6	9.9	11.3	8.6	27.9	12.8	31.3
Sweden	.8	1.1	2.4	1.4	2.0	9.6	9.3	8.3	8.5	7.6	7.3	13.7
Switzerland	5.7	6.3	6.1	6.2	7.2	12.1	15.7	13.0	10.7	14.2	12.3	18.9
United Kingdom	4.8	4.4	5.1	4.2	6.9	10.2	13.6	15.6	13.5	9.8	13.9	26.5
Canada	3.8	5.0	6.5	6.0	8.3	16.1	18.8	15.8	14.2	16.7	23.5	30.8
Japan	2.9	6.4	9.5	12.5	16.6	47.4	58.6	60.1	61.5	74.9	132.7	132.7
Other Countries	1.4	.5	1.8	2.2	2.9	10.1	10.4	9.6	9.5	10.6	15.6	33.0

(a) Less than $50,000; included in "Other Countries."
(b) Data does not include parts. See previous page.

Note: Individual items may not add to totals due to rounding.

Source: U.S. Department of Commerce, Bureau of the Census, "IM 146."


Machine Tool Industry Indices
of Unfilled Orders & Imports
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1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
'68
'70
'72
'74
'76
'78
'80
'82
'84
'86
Unfilled Orders
Imports

UNITED STATES IMPORTS OF MACHINE TOOLS AND PARTS

By Machine Classification, 1974 to Date

(Millions of Dollars)

Machine Classification	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
GRAND TOTAL	$330.3	$382.4	$383.3	$482.2	$832.4	$1,269.5	$1,556.9	$1,712.9	$1,489.4	$1,100.2	$1,652.7	$2,110.2
METAL CUTTING	261.3	303.0	293.6	386.7	681.6	1,027.6	1,282.2	1,485.1	1,258.1	836.9	1,316.5	1,685.6
Complete Machines	209.1	248.1	245.3	319.2	582.2	833.1	1,064.4	1,291.5	1,057.4	716.9	1,056.7	1,374.8
Gear Cutting or Hobbing	10.7	20.7	16.9	13.5	25.9	28.4	29.4	37.0	25.8	13.8	18.1	20.5
Drilling	8.8	9.4	15.3	19.6	18.7	25.0	27.2	26.4	20.7	9.9	17.9	32.6
Milling	19.8	23.3	25.9	27.9	47.7	83.1	138.1	124.7	87.7	52.5	83.4	133.7
Machining Centers	(a)	(a)	(a)	(a)	22.0	39.6	93.4	195.7	188.9	164.9	248.0	330.0
Boring and Vertical Turret Lathes	28.8	41.1	41.0	51.8	65.9	70.7	76.9	86.7	78.8	44.6	49.7	50.4
Lathes (Exc. Vertical Turret Lathes)	73.1	77.0	77.0	113.9	219.4	353.6	380.0	479.8	338.6	165.7	268.1	350.3
Grinding	32.4	34.5	32.2	39.2	68.1	85.2	150.5	137.2	117.6	89.6	118.5	147.9
Other	35.5	42.5	37.1	53.3	63.6	82.4	84.4	87.2	98.7	72.8	129.4	169.8
Metal Cutting, $2,500 and Under	(b)	(b)	(b)	(b)	50.9	65.1	50.0	70.9	68.9	83.2	91.8	97.1
Used and Rebuilt	(b)	(b)	(b)	(b)	(b)	(b)	35.2	45.9	31.7	19.9	31.6	42.5
Parts	52.2	54.8	48.3	67.5	99.5	194.5	217.8	193.6	200.7	120.0	259.8	310.9
METAL FORMING	68.9	79.4	89.7	95.5	150.7	241.9	274.7	227.8	231.3	263.3	336.1	424.5
Complete Machines	61.6	69.4	73.0	81.7	133.1	210.7	234.1	190.4	196.0	229.5	299.9	363.8
Metal Forming, $2,500 and Under	(b)	(b)	(b)	(b)	4.1	4.5	3.9	4.5	4.6	5.2	8.1	9.2
Used and Rebuilt	(b)	(b)	(b)	(b)	(b)	(b)	3.5	5.5	3.9	5.5	6.0	7.4
Parts	7.3	10.0	16.7	13.8	17.6	31.2	40.6	36.3	35.4	33.8	36.3	60.7

(a) Included in "Other Metal Cutting Machine Tools."
(b) Included in respective machine classifications.

Note: Individual items may not add to totals due to rounding. This table is based on a set of classifications which was expanded in 1978. A seperate table on the following page reports import data for 1984 and 1985 using the more detailed machine tool categories.

Source: U.S. Department of Commerce, Bureau of the Census, "IM 146."

It should be noted that machine tool imports, as reflected in government statistics, are actually undervalued. They reflect values in the country of origin and do not include ocean freight, insurance, dealer commissions or import duties. The purchaser in this country is paying significantly more for imported machine tools than is reported in the import statistics.

U.S. IMPORTS OF METAL CUTTING MACHINE TOOLS AND PARTS

By Machine Classification, 1984 and 1985

(Value in Thousands of Dollars)

Machine Classification	1984 Units	1984 Value	1985 Units	1985 Value
GRAND TOTAL	1,357,119	$1,316,525(a)	1,068,872	$1,685,645(a)
Complete New Machines	1,347,975	$1,025,079	1,060,391	$1,332,266
Gear Hobbers	106	8,304	80	8,730
Gear Shapers	15	2,061	7	688
Gear Cutting Machines, N.E.C.	9	855	16	872
Vertical Mach. Ctrs. ATC, NC, Y-Axis Travel 26" or Less	1,833	132,506	2,873	196,826
Vertical Mach. Ctrs. ATC, NC, Y-Axis Travel Over 26"	108	11,473	209	16,187
Horizontal Machining Centers, ATC, NC	652	74,036	717	81,032
Machining Center, NC, N.E.C.	318	29,987	389	35,918
Single Station and Multi-Station Transfer Machines	50	12,747	90	20,628
Way Type Machines (Unit Heads)	—	—	0	0
Horiz. Boring-Drilling-Milling Machines, Table Type, NC	18	3,883	18	3,391
Horiz. Boring-Drilling-Milling Machines, NC, N.E.C.	39	5,131	34	4,361
Vertical Boring-Drilling-Milling Machines, NC	74	7,612	140	9,582
Horiz. Boring-Drilling-Milling Machines, non-NC	59	6,258	23	1,468
Vertical Boring-Drilling-Milling Machines, non-NC	268	7,612	97	6,444
Drilling Machines, NC	94	5,389	178	11,654
Drilling Machines, Multi-Spindle, non-NC	66	1,271	49	2,790
Drilling Machines, Radial, non-NC	343	2,316	441	2,738
Drilling Machines, Upright, Single Spindle, non-NC	75	463	61	927
Drilling Machines, non-NC, N.E.C.	338	8,422	585	14,446
Milling Machines, NC	300	34,709	473	41,302
Milling Machines, Profiling, Dupl. & Die Sinking, non-NC	46	634	58	4,427
Milling Machines, Knee Type, non-NC	2,825	18,231	4182	23,890
Milling Machines, Bed Type, non-NC	501	6,118	363	24,572
Milling Machines, non-NC, N.E.C.	2,799	23,757	2660	39,526
Vertical Boring Machines, incl. VTL's NC	22	4,706	26	4,700
Vertical Boring Machines, incl. VTL's, non-NC	180	5,419	141	2,610
Boring Machines, NC, N.E.C.	14	2,242	25	4,050
Boring Machines, non-NC, N.E.C.	170	6,817	468	13,772
Horizontal Lathes, NC, Less Than 25 HP	2,059	106,299	3121	158,432
Horizontal Lathes, NC, 25-50 HP	649	55,940	802	65,366
Horizontal Lathes, NC, Over 50 HP	50	6,235	63	8,633
Horizontal Engine & Toolroom Lathes, non-NC	3,253	24,716	4,385	34,901
Automatic Chucking Lathes, Single Spindle, non-NC	92	2,878	213	8,704
Automatic Chucking Lathes, Multi-Spindle, non-NC	123	3,376	157	6,041
Automatic Bar Machines, Single Spindle, non-NC	148	2,548	139	2,475
Automatic Bar Machines, Multi-Spindle, non-NC	114	6,613	51	4,063
Horizontal Lathes, non-NC, N.E.C.	334	6,869	281	6,507
Vertical Lathes, excl. VTL's, NC	423	27,017	313	20,328
Vertical Lathes, excl. VTL's, non-NC	1,774	25,603	2,413	34,805
Gear Tooth Grinding & Finishing Machines	198	6,894	198	10,195
Tool & Cutter Grinding Machines, NC	48	3,550	34	1,414
Tool & Cutter Grinding Machines, non-NC	1,168	16,556	1,324	17,608
Honing & Lapping Machines	160	4,814	248	8,437
Grinding Machines, Flat Surface, NC	77	6,527	62	4,542
Grinding Machines, Flat Surface Reciprocating Table, non-NC	764	7,454	954	12,801
Grinding Machines, Flat Surface, non-NC, N.E.C.	1,149	18,873	2,033	28,458
Grinding & Polishing Machines, NC, N.E.C.	78	9,901	112	11,476
External Grinding Machines, non-NC	283	11,270	248	13,224
Internal Grinding Machines, non-NC	107	3,791	112	4,772
Grinding, Polishing & Buffing Machines, non-NC, N.E.C.	187	5,218	270	10,150
Grinding Machines, non-NC, N.E.C.	1,228	30,564	1,349	35,034

Footnotes at the end of Table.

(Continued)

U.S. IMPORTS OF METAL CUTTING MACHINE TOOLS AND PARTS

By Machine Classification, 1984 and 1985

(Value in Thousands of Dollars)
(Continued)

Machine Classification	1984		1985	
	Units	Value	Units	Value
Traveling Wire Electrical Discharge Machines	746	$ 38,425	1,003	$ 54,243
All Other Electrical Discharge Machines	505	20,932	432	20,879
Spark Erosion, Ultrasonic & Electrolytic Machines, NC	37	3,644	104	5,399
Spark Erosion, Ultrasonic & Electrolytic Machines, non-NC	144	5,148	211	6,058
Metal Cutting Machine Tools, NC, N.E.C.	17	1,825	29	3,666
Sawing & Cut-off Machines, non-NC	1,480	20,531	1,797	25,061
Broaching Machines, non-NC	11	1,769	61	3,311
Metal Cutting Machine Tools, non-NC, N.E.C.	979	24,424	1260	30506
Metal Cutting Machine Tools, Less Than $2,500	1,318,268	91,768	1,022,209	97114
Metal Cutting Machine Tools, Used or Rebuilt	9,144	31,625	8,481	42,451
Parts	—	259,821	—	310,928

N.E.C. - Not Elsewhere Classified.

(a) The data may not add to totals due to rounding.

Source: U.S. Department of Commerce, Bureau of Census, "IM 146."

U.S. IMPORTS OF METAL FORMING MACHINE TOOLS AND PARTS

By Machine Classification, 1984 and 1985

(Value in Thousands of Dollars)

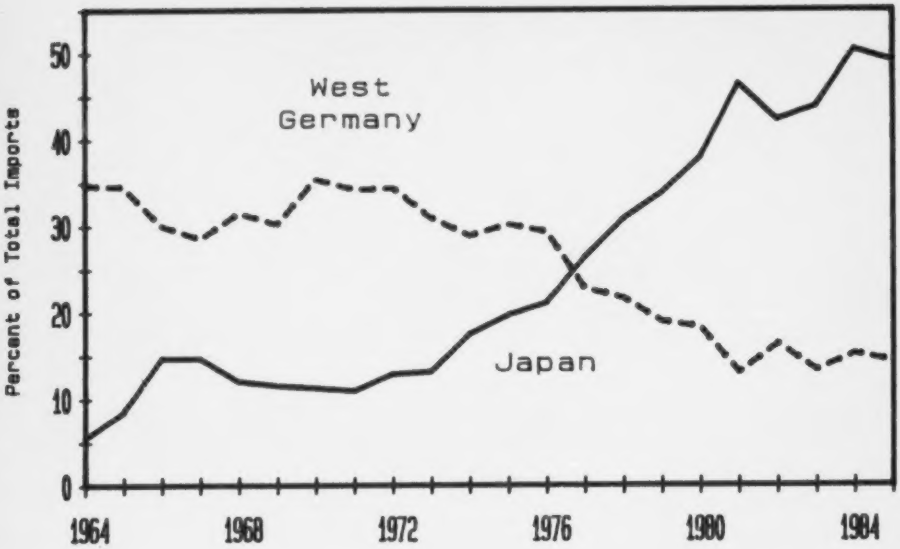
Machine Classification	1984		1985	
	Units	Value	Units	Value
GRAND TOTAL	62,150	$336,141(a)	81,147	$424,521(a)
Complete New Machines	61,566	$293,885	80,533	$356,427
Die Casting Machines	357	11,108	377	24,256
Punching & Shearing Machines, incl. Combination, NC	462	51,077	542	51,553
Shearing Machines, non-NC	706	12,521	892	16,010
Punching & Combination Punching & Shearing Machines, non-NC	652	11,104	809	11,869
Bending, Folding, Straightening & Flattening Machines, NC	170	8,228	270	15,496
Press Brakes, non-NC	978	24,533	1,198	26,064
Bending Rolls, Ram & Press Bending Machines, non-NC	146	2,529	208	2,519
Bending, Folding, Str. & Flattening Machines, non-NC, N.E.C.	994	20,955	1,283	26,030
Metal Forming Machine Tools, NC, N.E.C.	167	10,052	36	4,069
Mechanical Presses, non-NC	366	22,768	466	31,875
Hydraulic Presses, Vertical, Single Action, non-NC	79	2,116	118	11,172
Hydraulic & Pneumatic Presses, non-NC, N.E.C.	430	45,691	492	39,975
Headers & Upsetters, non-NC	183	15,896	155	7,252
Forging Machines, non-NC, N.E.C.	105	5,457	115	4,291
Metal Forming Machine Tools, non-NC, N.E.C.	1,560	41,692	1,871	74,724
Metal Forming Machine Tools, Less Than $2,500	54,211	8,111	71,701	9,225
Metal Forming Machine Tools, Used or Rebuilt	584	5,974	614	7,361
Parts	—	36,282	—	60,733

N.E.C. - Not Elsewhere Classified

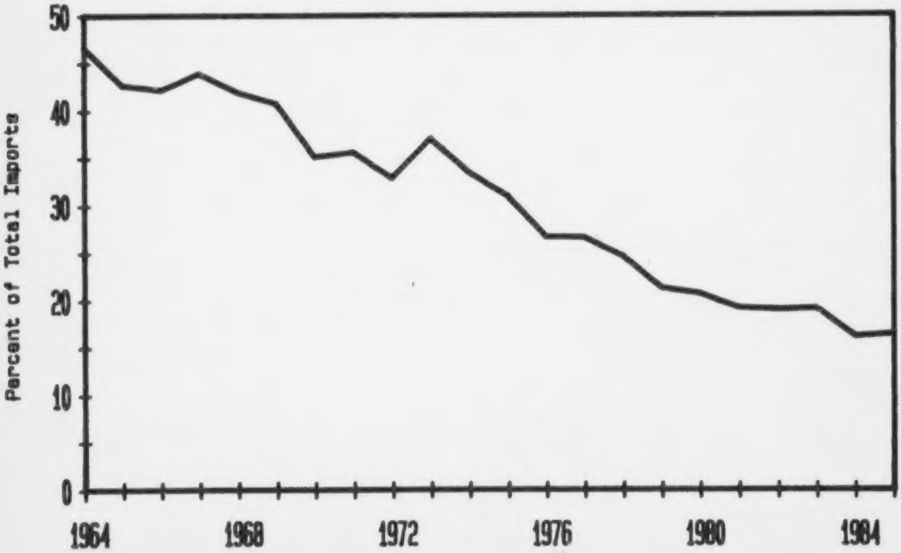
(a) The data may not add to totals due to rounding.

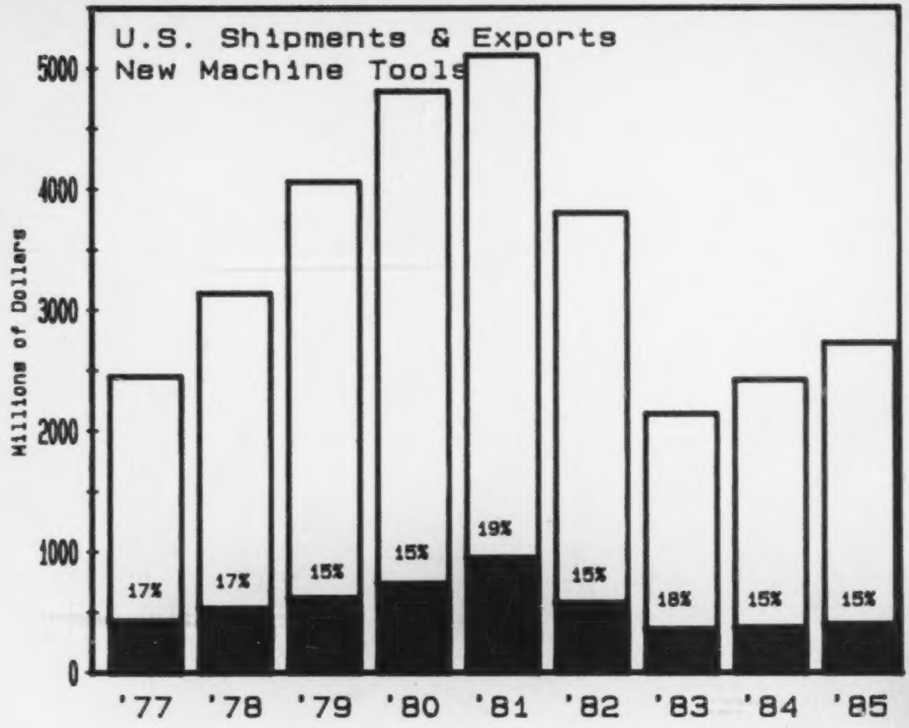
Source: U.S. Department of Commerce, Bureau of Census, "IM 146."

U.S. Machine Tool Imports From West Germany and Japan

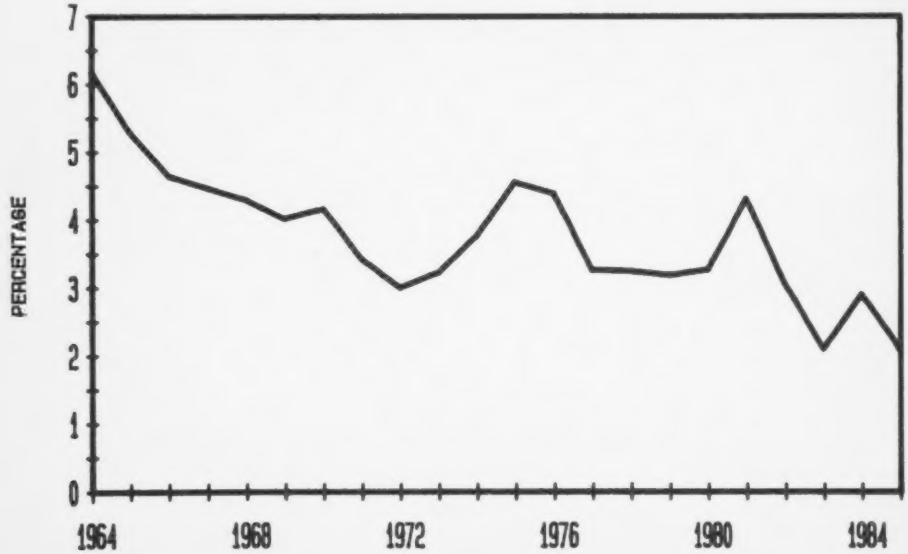


U.S. Machine Tool Imports from France, Italy, Switz. & the U.K.





U.S. MACHINE TOOL EXPORTS
Percent of World Machine Tool Consumption



U.S. EXPORTS OF MACHINE TOOLS

Cutting and Forming By Destination, 1974 to Date

(Millions of Dollars)

Destination	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
GRAND TOTAL	$443.8	$567.6	$546.5	$452.1	$560.2	$648.8	$785.3	$1,027.6	$615.0	$406.0	$409.3	$452.4
EUROPE	192.2	242.2	194.1	163.8	201.3	212.3	228.0	231.8	163.6	128.6	110.0	101.4
Austria	2.0	.5	1.5	1.8	.3	.9	1.8	1.3	1.2	2.3	.2	.7
Belgium	7.8	9.8	5.0	7.8	8.7	4.1	3.6	4.9	2.9	1.5	4.3	2.3
Denmark	1.1	1.2	2.1	2.5	1.7	3.1	3.1	1.3	1.4	.4	.8	1.0
Finland	1.1	1.0	2.0	.9	.6	1.9	1.5	1.8	6.3	1.1	.4	.8
France	11.9	15.9	18.9	10.8	12.2	20.4	21.3	29.2	19.2	12.5	11.6	6.7
Germany, West	16.9	13.8	16.0	23.7	29.7	28.5	33.7	35.2	21.8	30.9	21.4	23.1
Greece	.9	1.7	1.1	.5	1.2	4.5	1.1	1.4	1.6	.3	.3	.3
Ireland	1.0	2.1	1.5	1.0	2.0	2.9	3.5	11.4	4.2	4.5	4.0	2.2
Italy	22.9	11.6	13.8	13.5	11.0	17.5	13.4	16.7	14.9	15.5	6.8	11.2
Netherlands	5.2	4.3	3.6	4.5	4.8	5.3	7.8	7.4	3.3	2.7	2.0	2.9
Norway	.3	2.9	1.7	4.1	1.5	2.3	1.9	1.0	.6	.3	.9	.7
Poland	3.2	7.9	13.5	8.2	24.2	3.1	2.1	(a)	.3	2.0	.6	1.1
Portugal	.6	.3	.7	.2	.3	.4	.4	2.1	.1	(a)	.3	.2
Romania	.4	1.9	1.6	4.8	21.0	6.6	3.3	1.5	3.3	(a)	0	0
Spain	6.1	28.2	5.8	4.3	3.7	4.6	13.5	14.2	6.3	2.1	2.7	3.7
Sweden	9.9	9.1	13.2	10.2	6.7	4.0	11.0	5.5	5.0	2.7	4.1	3.6
Switzerland	4.1	4.1	2.8	3.2	4.3	6.2	12.5	9.2	7.1	5.3	5.3	3.6
United Kingdom	27.7	34.8	38.3	26.6	46.4	83.7	62.9	64.1	59.8	35.0	40.8	31.2
U.S.S.R.	68.1	89.1	48.1	31.4	16.7	7.3	25.8	16.5	1.3	7.5	.6	1.2
Yugoslavia	.9	1.5	2.2	1.6	3.6	3.6	2.1	4.8	1.1	.7	.9	.5
All Other	.2	.5	.2	1.7	.4	.4	1.7	2.3	1.8	1.4	2.0	4.5
NORTH AND CENTRAL AMERICA	103.9	123.7	136.7	109.4	119.8	167.9	304.4	520.5	221.6	108.1	132.5	149.1
Canada	65.0	76.7	78.9	61.1	76.5	95.4	162.4	256.1	82.3	61.7	82.6	82.0
Mexico	34.9	40.3	52.9	42.0	36.9	67.7	135.7	258.9	135.9	42.5	45.7	63.8
All Other	3.0	5.1	4.1	5.1	5.4	4.8	6.3	5.5	3.3	3.8	4.2	3.4
SOUTH AMERICA	50.5	77.9	116.6	73.8	75.3	89.5	64.5	62.1	51.5	18.4	33.6	37.2
Argentina	3.2	4.0	4.3	3.2	10.8	8.0	13.8	7.7	8.2	1.9	3.7	1.1
Brazil	38.2	55.4	86.5	40.5	31.2	23.8	19.2	24.2	21.0	10.9	18.5	24.6
Chile	.6	.6	1.3	1.1	1.2	2.3	2.3	2.2	2.0	.3	1.8	.1
Colombia	.8	2.2	1.3	4.8	3.1	4.1	5.6	4.6	3.4	1.7	3.2	3.8
Ecuador	.6	.9	1.5	2.4	2.5	4.0	1.6	3.9	1.3	.4	.5	.1
Peru	.7	2.0	2.1	1.0	.3	1.7	2.2	3.5	.9	.1	.4	.3
Venezuela	5.9	12.4	19.2	20.2	25.5	45.2	18.9	15.1	14.3	2.9	5.3	7.0
All Other	.5	.4	.4	.6	.7	.4	.9	.9	.3	.1	.2	.1

Footnotes at the end of Table.

(Continued)

U.S. EXPORTS OF MACHINE TOOLS

Cutting and Forming By Destination, 1974 to Date

(Millions of Dollars)
(Continued)

Destination	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
ASIA	$74.7	$89.8	$79.2	$87.5	$139.3	$151.9	$158.8	$163.6	$141.5	$131.6	$116.1	$138.0
China	(a)	(a)	(a)	(a)	6.0	9.3	6.7	1.5	2.4	16.6	13.0	26.6
Hong Kong	.4	.6	.7	1.2	2.3	1.6	4.0	10.2	2.5	2.2	3.1	4.5
India	1.9	3.0	2.5	4.2	6.9	4.4	9.7	15.2	15.4	5.4	6.4	6.6
Iran	1.2	6.3	12.1	9.7	21.0	1.9	0	(a)	1.0	(a)	.5	1.0
Israel	3.6	5.8	3.9	3.9	4.1	10.9	12.4	7.7	6.8	7.0	8.2	5.4
Japan	49.1	38.5	27.0	22.1	39.0	48.3	59.1	54.2	51.0	35.7	39.4	36.2
Korea, Republic of	3.6	5.0	5.1	6.8	24.0	34.1	24.3	15.0	11.2	8.8	8.3	14.9
Philippines	3.9	6.4	1.8	1.5	1.4	2.6	3.3	3.2	5.2	2.0	1.3	1.2
Saudi Arabia	(a)	(a)	(a)	(a)	9.1	15.2	10.9	14.9	17.3	21.8	12.1	3.0
Singapore	1.9	2.9	3.1	3.9	5.5	6.3	5.5	13.7	14.7	9.3	5.1	12.4
Taiwan	3.7	7.6	9.1	17.1	9.6	10.1	15.3	16.2	8.1	9.2	5.2	6.6
Turkey	1.0	2.7	1.0	.6	4.8	1.5	.4	1.4	1.2	3.4	6.7	6.8
All Other	4.4	11.0	12.9	16.5	5.6	5.6	7.2	10.3	4.8	10.2	6.9	12.9
OCEANIA	12.9	21.5	8.3	7.8	13.7	17.0	12.2	22.7	12.7	9.1	7.6	15.4
Australia	12.1	21.0	7.4	6.6	12.8	15.4	10.7	21.6	11.1	8.0	7.3	14.6
New Zealand	.9	.5	.8	1.1	.8	1.6	1.4	.7	1.4	1.0	.3	.7
All Other	(a)	(a)	.1	.1	.1	(a)	.1	.4	.1	.1	(a)	(a)
AFRICA	9.5	12.4	11.6	9.8	10.6	10.2	17.3	6.9	24.0	10.1	9.4	11.1
Egypt	(a)	.1	.4	1.2	1.1	.9	2.5	6.3	3.9	2.2	4.0	2.7
South Africa	7.5	9.1	7.7	4.9	6.4	5.6	11.8	16.9	10.5	5.4	3.8	4.6
All Other	2.0	3.2	3.5	3.7	3.2	3.7	3.0	3.7	9.6	2.4	1.6	3.8

(a) Less than $50,000 and/or included in "All Other."

Note: Individual items may not add to totals due to rounding. These figures represent exports of domestic merchandise; value at U.S. port. The figures are lower than those for total exports because they include used machines but exclude parts. They are higher than manufacturers' export shipments because the latter are priced f.o.b. factory and exclude export shipments made by other than manufacturers.

Source: U.S. Bureau of the Census, "EM 522."

U.S. EXPORTS OF METAL CUTTING MACHINE TOOLS

By Country of Destination, 1974 to Date

(Millions of Dollars)

Destination	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
GRAND TOTAL	$264.3	$343.1	$289.8	$257.7	$366.5	$408.0	$495.4	$724.0	$403.5	$258.3	$250.2	$285.9
EUROPE	121.7	161.6	115.4	103.7	143.7	144.7	150.0	153.6	112.1	84.4	71.4	64.6
Austria	1.3	.2	1.2	1.3	.2	.8	1.4	1.2	1.0	1.9	.1	.6
Belgium	5.1	5.3	2.8	5.5	5.5	2.2	.8	1.6	2.1	.8	3.3	1.4
Denmark	.4	.6	1.9	1.8	.9	1.3	1.3	.5	.8	(a)	.4	.8
Finland	.8	.5	1.3	.1	.6	1.8	1.4	1.3	2.4	.3	.1	.8
France	5.9	8.5	11.7	5.0	7.5	11.1	10.6	19.1	13.9	5.1	4.1	3.6
Germany, West	9.9	8.3	8.8	13.2	18.1	17.3	22.8	27.3	16.5	17.0	12.7	12.1
Greece	.2	.2	.6	.2	.9	1.4	.6	.3	.7	.1	.2	(a)
Ireland	.3	.3	.7	.2	1.4	1.1	2.5	3.0	1.9	1.8	3.1	1.5
Italy	16.5	8.9	5.8	9.1	6.6	11.1	9.7	10.1	6.5	8.7	6.0	8.9
Netherlands	1.8	1.9	1.0	2.5	2.9	3.9	5.0	1.5	1.3	1.2	.7	1.7
Norway	.2	2.2	1.5	3.9	1.0	1.8	.9	.7	.4	.1	.7	.3
Poland	2.9	4.4	4.5	3.9	19.4	2.7	2.1	(a)	.2	1.5	.5	.9
Portugal	.3	.1	.1	.1	.2	.2	.3	1.6	.1	(a)	.1	.2
Romania	.1	.3	1.4	4.8	20.9	1.3	2.3	1.4	1.2	(a)	0	0
Spain	2.5	19.1	3.6	2.6	2.0	3.3	3.1	8.2	4.0	1.4	1.1	3.0
Sweden	7.9	7.6	11.6	9.1	5.7	3.2	7.5	3.5	2.2	1.5	3.6	3.2
Switzerland	3.1	3.2	2.3	2.4	3.7	5.3	8.9	7.8	5.4	5.2	2.0	2.6
United Kingdom	17.0	21.0	21.6	13.3	27.2	67.4	42.8	46.7	49.3	29.5	30.6	19.9
U.S.S.R.	44.8	67.6	31.8	23.0	15.5	4.6	23.6	15.1	1.2	7.4	.6	.4
Yugoslavia	.5	1.1	.8	.7	3.4	2.4	1.1	1.8	.5	.6	.7	.3
All Other	.1	.3	(a)	.6	.3	.4	1.3	.9	.4	.1	.8	2.3
NORTH AND CENTRAL AMERICA	57.4	69.0	74.6	60.6	71.1	108.1	205.1	401.8	137.5	60.8	79.6	91.7
Canada	35.8	45.0	39.6	34.7	44.7	60.4	116.2	208.0	57.6	33.8	45.4	49.3
Mexico	19.5	21.3	33.4	23.5	23.0	44.8	86.2	190.8	78.0	24.6	31.4	40.3
All Other	1.5	2.2	1.5	2.1	2.8	2.9	2.7	3.0	1.9	2.4	2.8	2.1
SOUTH AMERICA	29.3	38.2	47.1	41.9	44.1	37.9	33.0	33.2	33.8	12.1	26.0	30.1
Argentina	2.4	2.6	2.1	2.0	6.6	3.7	6.5	4.3	6.0	1.1	2.0	1.1
Brazil	23.9	29.9	34.9	28.0	25.5	18.5	14.6	14.7	16.2	8.0	17.4	20.9
Chile	.2	.4	1.0	.6	.4	.6	.9	1.3	.6	.2	1.6	.1
Colombia	.2	1.0	.3	1.4	1.3	1.4	3.2	2.1	2.5	.9	2.3	2.2
Ecuador	.2	.4	.9	.6	1.3	1.3	.7	1.7	.5	.1	.5	.1
Peru	.3	.6	.5	.4	.2	.5	.6	.6	.8	(a)	.3	.3
Venezuela	2.0	3.2	7.2	8.6	8.6	11.5	5.9	7.9	7.0	1.6	1.8	5.5
All Other	.1	.1	.2	.3	.3	.3	.6	.6	.1	.1	.2	(a)

Footnotes at the end of Table.

(Continued)

U.S. EXPORTS OF METAL CUTTING MACHINE TOOLS

By Country of Destination, 1974 to Date

(Millions of Dollars)
(Continued)

Destination	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
ASIA	$43.6	$51.5	$42.1	$43.0	$96.5	$100.6	$90.8	$105.9	$100.4	$92.7	$66.4	$91.5
China	(a)	(a)	(a)	(a)	4.6	8.8	3.9	1.3	2.0	13.1	10.1	21.7
Hong Kong	.3	.3	.5	.5	1.8	1.3	.9	1.8	1.5	1.6	2.3	3.1
India	1.2	2.0	1.9	2.3	4.1	3.4	7.0	10.4	11.7	4.2	2.8	4.4
Iran	.5	1.8	1.8	3.3	7.2	.3	0	(a)	.6	(a)	(a)	.1
Israel	2.1	3.7	2.5	3.1	3.0	6.3	4.3	5.3	4.0	3.0	2.8	3.6
Japan	29.6	23.6	15.6	12.1	30.9	31.1	38.6	40.8	36.6	30.1	23.8	20.1
Korea, Republic of	1.7	1.8	4.3	5.6	22.1	24.2	16.4	12.7	9.0	6.0	6.7	9.8
Philippines	3.2	5.0	1.1	.5	1.0	1.6	1.6	1.9	4.0	1.5	.1	.6
Saudi Arabia	(a)	(a)	(a)	(a)	3.9	7.4	4.7	8.0	8.3	9.0	2.6	2.1
Singapore	.8	2.0	1.5	2.2	4.6	5.2	3.8	10.4	11.6	6.3	2.3	7.4
Taiwan	2.2	4.2	4.9	5.0	6.1	6.9	6.5	6.5	7.3	7.8	4.2	3.8
Turkey	.3	1.4	.5	.5	4.5	1.5	.3	.9	.7	2.6	5.0	5.2
All Other	1.6	5.6	7.5	7.9	2.7	2.5	2.8	5.8	3.2	7.5	3.7	9.6
OCEANIA	7.0	15.4	4.8	3.7	6.3	9.8	5.5	15.9	6.7	4.0	2.2	4.5
Australia	6.7	15.2	4.2	3.2	5.8	8.6	4.9	15.3	6.1	3.2	2.0	4.0
New Zealand	.3	.2	.6	.5	.4	1.2	.5	.3	.6	.6	.2	.5
All Other	(a)	(a)	(a)	(a)	(a)	(a)	(a)	.3	.1	.1	(a)	0
AFRICA	5.4	7.4	5.8	4.8	4.8	6.9	10.8	13.5	12.8	4.2	4.5	3.4
Egypt	(a)	.1	.2	.6	.4	.7	1.8	3.2	2.4	.7	2.0	1.4
Rep. of South Africa	4.5	5.6	3.8	3.1	3.4	4.7	7.8	8.5	7.8	2.8	1.5	.9
All Other	.2	1.8	1.8	1.1	.9	1.5	1.2	1.8	2.8	.8	1.1	1.0

(a) Less than $50,000 and/or included in "All Other".

NOTE: Individual items may not add to totals due to rounding. Figures include used machine tools but exclude parts.

Source: U.S. Bureau of the Census, "EM 522."

U.S. EXPORTS OF METAL FORMING MACHINE TOOLS

By Country of Destination, 1974 to Date

(Millions of Dollars)

Destination	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
GRAND TOTAL	$179.5	$224.5	$256.7	$194.4	$193.7	$240.8	$290.0	$303.6	$211.5	$147.7	$159.1	166.5
EUROPE	70.6	80.7	78.7	60.1	57.7	67.6	78.1	78.2	51.4	44.3	38.6	36.8
Austria	.6	.4	.3	.5	.1	.1	.4	.1	.2	.4	.1	(a)
Belgium	2.7	4.5	2.2	2.3	3.2	1.8	2.9	3.2	.8	.7	1.0	.9
Denmark	.7	.6	.2	.7	.8	1.8	1.7	.8	.6	.3	.5	.2
Finland	.3	.5	.8	.7	(a)	.1	.1	.5	3.9	.8	.3	.1
France	6.0	7.4	7.2	5.8	4.7	9.3	10.6	10.0	5.3	7.4	7.5	3.1
Germany, West	7.0	5.5	7.2	10.5	11.6	11.1	10.9	7.9	5.3	13.9	8.8	10.9
Greece	.7	1.5	.5	.4	.3	3.1	.6	1.1	.9	.3	.1	.2
Ireland	.7	1.8	.7	.8	.6	1.8	1.1	8.5	2.3	2.7	.8	.7
Italy	6.4	2.7	8.0	4.4	4.4	6.4	3.7	6.7	8.5	6.8	.8	2.3
Netherlands	3.4	2.5	2.6	1.9	1.9	1.5	2.8	5.9	2.0	1.5	1.4	1.2
Norway	.1	.6	.2	.3	.5	.5	1.0	.3	.2	.2	.2	.4
Poland	.3	3.5	9.0	4.3	4.8	.4	(a)	0	(a)	.5	.1	.2
Portugal	.3	.2	.6	(a)	.2	.2	.2	.5	(a)	(a)	.2	(a)
Romania	.3	1.6	.2	(a)	.1	5.3	1.0	.1	2.1	0	0	0
Spain	3.6	9.0	2.2	1.7	1.8	1.3	10.4	6.0	2.3	.6	1.4	.7
Sweden	2.0	1.5	1.5	1.1	1.1	.8	3.4	2.0	2.9	1.1	.6	.4
Switzerland	1.0	.9	.5	.8	.6	.9	3.6	1.4	1.7	.2	3.3	1.0
United Kingdom	10.7	13.8	16.7	13.4	19.2	16.3	20.2	17.3	10.5	5.6	10.2	11.3
U.S.S.R.	23.3	21.4	16.3	8.4	1.2	2.7	2.2	1.4	.1	(a)	.1	.7
Yugoslavia	.4	.4	1.5	.9	.1	1.3	1.0	3.1	.6	(a)	.2	.2
All Other	0	.2	.2	1.1	.3	1.0	.1	1.4	1.5	1.3	1.2	2.2
NORTH AND CENTRAL AMERICA	46.6	54.7	62.1	48.8	48.7	59.8	99.4	118.8	84.1	47.3	52.9	57.4
Canada	29.2	31.6	39.3	26.4	31.8	34.9	46.2	48.2	24.7	28.0	37.2	32.7
Mexico	15.4	19.1	19.5	18.5	13.9	22.9	49.5	68.1	57.9	17.9	14.4	23.5
All Other	1.5	2.9	2.6	3.0	2.6	2.0	3.7	2.5	1.5	1.4	1.4	1.2
SOUTH AMERICA	21.1	39.7	69.5	31.9	31.2	51.7	31.6	28.8	17.7	6.3	7.6	7.1
Argentina	.8	1.4	2.2	1.2	4.3	4.3	7.3	3.4	2.2	.8	1.7	.1
Brazil	14.3	25.4	51.6	12.5	5.7	5.3	4.7	9.5	4.8	3.0	1.1	3.8
Chile	.4	.2	.3	.5	.8	1.7	1.4	.9	1.4	(a)	.2	(a)
Colombia	.6	1.2	1.0	3.4	1.8	2.6	2.4	2.5	.9	.8	.9	1.6
Ecuador	.4	.5	.6	1.9	1.2	2.6	.9	2.2	.8	.3	.1	(a)
Peru	.4	1.5	1.6	.6	.1	1.2	1.6	2.9	.1	.1	.1	.1
Venezuela	3.9	9.2	12.0	11.6	16.9	33.7	13.0	7.2	7.3	1.3	3.5	1.5
All Other	.3	.3	.2	.2	.4	.3	.3	.2	.2	(a)	.1	(a)

Footnotes are at the end of the Table. (Continued)

U.S. EXPORTS OF METAL FORMING MACHINE TOOLS

By Country of Destination, 1974 to Date

(Millions of Dollars)
(Continued)

Destination	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
ASIA	$3.1	$38.3	$37.0	$44.5	$42.8	$51.2	$67.9	$57.7	$41.1	$38.9	$49.6	$46.5
China	(a)	(a)	(a)	(a)	1.4	.5	2.8	.2	.4	3.6	2.8	4.9
Hong Kong	.2	.2	.2	.7	.5	.3	3.0	8.4	1.0	.6	.8	1.3
India	.7	.9	.5	1.9	2.8	1.0	2.7	4.8	3.7	1.1	3.6	2.2
Iran	.7	4.5	10.3	6.4	13.7	1.6	0	(a)	.4	0	.5	.9
Israel	1.5	2.0	1.4	.7	1.1	4.6	8.1	2.4	2.8	4.0	5.4	1.9
Japan	19.5	15.0	11.4	9.9	8.1	17.1	20.5	13.4	14.4	5.6	15.6	16.1
Korea, Republic of	1.9	3.2	.8	1.3	2.0	9.9	7.9	2.3	2.3	2.8	1.6	5.1
Philippines	.7	1.4	.7	1.0	.4	1.0	1.7	1.3	1.2	.6	1.1	.6
Saudi Arabia	(a)	(a)	(a)	(a)	5.2	7.8	6.3	6.9	9.0	12.8	9.4	.9
Singapore	1.1	.9	1.6	1.7	.8	1.1	1.6	3.3	3.1	2.9	2.8	5.0
Taiwan	1.4	3.4	4.2	12.1	3.5	3.2	8.8	9.7	.8	1.4	.9	2.8
Turkey	.7	1.3	.5	.1	.4	(a)	.1	.5	.5	.8	1.7	1.6
All Other	2.6	13.2	5.4	8.7	2.9	3.1	4.4	4.4	1.6	2.8	3.2	3.4
OCEANIA	5.9	6.1	3.6	4.1	7.5	7.2	6.7	6.7	5.9	5.1	5.5	10.9
Australia	5.4	5.7	3.3	3.4	7.1	6.8	5.8	6.2	5.0	4.7	5.3	10.6
New Zealand	.5	.4	.2	.5	.3	.4	.8	.4	.9	.4	.1	.3
All Other	(a)	(a)	.1	.1	.1	(a)	(a)	.1	.1	0	(a)	(a)
AFRICA	4.2	5.0	5.8	5.0	5.8	3.3	6.3	13.4	11.2	5.8	4.9	7.8
Egypt	(a)	.1	.2	.6	.6	.2	.8	3.1	1.5	1.5	2.1	1.3
Rep. of South Africa	3.0	3.5	3.9	1.8	2.9	.9	4.0	8.3	2.7	2.7	2.3	3.7
All Other	1.2	1.4	1.7	2.6	2.3	2.2	1.6	2.0	7.0	1.7	.5	2.8

(a) Less than $50,000 and/or included in "All Other."

Note: Indiviual items may not add to totals due to rounding. Figures include used machine tools for all years but exclude parts.

Source: U.S. Bureau of the Census, "EM 522."

U.S. EXPORTS OF METAL CUTTING MACHINE TOOLS
By Machine Classification, 1974 to 1983
(Millions of Dollars)

Machine Classification	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
GRAND TOTAL	$320.7	$417.2	$362.7	$321.4	$453.7	$544.9	$674.6	$974.2	$630.5	$430.8
Complete New Machines	245.5	327.9	273.8	247.2	353.0	392.5	462.8	668.6	375.6	230.6
Machining Centers, N.C.										
Vertical, A.T.C.	18.4	27.4	35.5	35.9	13.1	14.1	9.3	11.4	6.1	3.3
Horizontal, A.T.C.					18.2	28.5	24.3	27.0	19.1	4.2
Manual Tool Change					2.2	2.8	23.2	15.0	8.8	5.8
Vertical Boring-Drilling-Milling	(a)	(a)	(a)	(a)	.9	.9	8.2	42.1	4.6	6.1
Horizontal Boring-Drilling-Milling	8.5	8.4	5.8	11.4	9.1	14.4	5.8	12.9	8.9	2.9
Vertical Boring and Turning Mills (incl. Vertical Turret Lathes)	3.3	7.7	8.1	6.6	6.6	10.6	13.6	18.7	14.5	5.7
Boring-Drilling-Milling, N.E.C.	2.4	3.7	2.4	2.2	5.0	6.5	5.5	5.7	4.4	3.9
Drilling, Vertical (Upright)	2.8	6.4	4.9	4.6	2.5	2.0	1.4	2.9	.8	2.5
Multiple Spindle	1.7	1.8	1.3	1.6	3.3	3.6	11.5	7.8	3.6	.7
Radial	.9	.9	1.6	1.1	1.6	1.3	1.9	2.0	1.3	1.2
Other	7.5	4.7	5.8	7.4	6.4	9.9	7.5	11.7	6.7	4.0
Gear Hobbers and Shapers (b)	.8	1.8	1.6	.4	1.3	2.1	8.8	22.7	5.3	1.6
Gear Tooth Grinding & Finishing	6.5	5.9	7.9	3.8	12.8	4.4	14.0	18.1	9.2	3.3
Other Gear Cutting (g)	21.9	23.7	16.2	23.9	32.9	37.3	38.4	39.3	22.7	6.7
External Cylindrical Grinding	10.8	9.6	11.1	3.7	34.0	13.2	9.3	15.9	7.2	3.9
Surface Grinding	6.8	8.6	10.8	8.3	8.8	11.4	16.8	26.2	17.4	12.6
Tool and Cutter Grinding	7.5	7.9	7.1	7.3	6.8	5.7	9.2	9.5	6.5	5.1
Polishing and Buffing	1.7	1.3	1.0	.9	2.7	2.9	5.2	11.2	8.1	3.6
Honing and Lapping	3.4	4.1	7.0	3.3	4.3	3.8	3.9	9.5	3.3	2.9
Internal Cylindrical Grinding	9.6	6.3	6.9	3.7	4.9	5.9	7.8	5.1	4.3	1.4
Other Grinding and Polishing (c)	13.3	15.2	13.4	12.9	19.3	23.1	32.7	49.0	24.3	19.6
Engine Lathes	3.8	6.8	6.1	4.3	8.3	6.1	3.0	5.6	2.4	3.5
Turret Lathes (Excl. Vertical)	4.5	4.6	9.4	6.7	7.1	7.0	(f)	(f)	(f)	(f)
Automatic Chucking Lathes										
Single Spindle	2.8	9.9	7.6	4.2	7.7	12.4	5.6	7.5	2.3	2.7
Multiple Spindle	5.3	2.8	2.8	4.6	3.4	4.9	3.6	4.3	2.3	1.0
Automatic Screw Machines	6.0	7.4	6.2	5.7	5.2	6.3	9.8	10.9	4.6	3.2
Other Lathes	8.6	12.1	15.3	16.8	11.9	16.3	45.1	61.8	58.8	24.5
Milling Machines										
Knee Type	4.6	4.7	3.2	4.5	4.0	3.4	1.1	.5	.8	1.5
Bed Type	1.6	1.8	1.7	2.9	11.9	2.8	2.8	2.0	.3	.1
Profile, Dup. & Die Sinking	2.9	2.9	3.4	1.0	5.5	4.9	2.9	5.5	1.6	1.5
Other	5.7	11.2	6.0	12.9	9.1	12.3	12.4	29.8	19.6	10.8
Broaching	3.2	5.5	1.8	3.4	11.6	2.4	6.9	15.5	13.3	1.4
Planers, Other than Gear	.3	.5	.6	.7	1.5	1.6	(a)	(a)	(a)	(a)
Shapers and Slotters	1.3	.5	1.0	.6						
Sawing and Cutoff	6.1	9.0	8.5	7.0	13.5	12.5	12.2	12.6	8.8	9.1
Tapping	1.0	1.4	3.4	1.6	1.9	1.9	(a)	(a)	(a)	(a)
Threading	4.9	3.0	2.5	4.5	4.2	9.9	(a)	(a)	(a)	(a)
Electrical Discharge	(a)	(a)	(a)	(a)	3.4	5.2	10.2	5.2	3.2	5.8
Single Station (Way Type)					.3	.4	51.7	97.2	36.4	21.1
Multi-Station	39.2	72.0	25.1	7.7	16.0	42.9				
Metal Cutting Machine Tools, N.E.C.										
$2,500 and Over, New (d)	9.8	17.3	11.9	10.8	11.7	14.5	21.1	27.1	20.1	13.2
Less than $2,500, New (e)	6.5	9.0	8.9	8.3	17.9	20.5	15.9	19.0	13.7	10.3
Used and Rebuilt Machines	18.8	15.2	16.0	10.5	13.5	15.5	32.6	55.4	27.9	27.7
Parts	56.4	74.1	72.9	63.7	87.3	136.9	179.2	250.2	226.9	172.5

N.E.C. - Not Elsewhere Classified.

(a) Included in "Metal Cutting Machine Tools, N.E.C."
(b) "Gear Hobbers" for years prior to 1978.
(c) "Other Grinding" for years prior to 1978.
(d) "$1,000 and Over" for years prior to 1978.
(e) "Less than $1,000" for years prior to 1978.
(f) Included in "Other Lathes."
(g) Data for years 1979 to 1982 may be inaccurate due to a reporting error by exporters.

Note: Individual items may not add to totals due to rounding.

Source: U.S. Bureau of the Census, "EM [illegible]"

U.S. EXPORTS OF METAL FORMING MACHINE TOOLS
By Machine Classification, 1974 to 1983
(Millions of Dollars)

Machine Classification	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
GRAND TOTAL	$245.7	$286.6	$320.0	$258.1	$284.9	$333.7	$424.6	$471.4	$371.9	$261.1
Complete New Machines	165.1	208.7	241.1	179.5	180.1	226.6	271.4	281.0	198.9	128.4
Punching and Shearing Machines	9.4	13.8	20.2	15.4	13.7	22.3	44.8	44.9	32.9	18.1
Bending and Forming Machines	21.3	22.9	26.0	25.5	39.2	45.7	41.0	46.0	35.1	19.7
Hydraulic and Pneumatic Presses		37.5	46.8	29.1	21.5	32.6	42.0	56.[illegible]	29.9	19.6
Mechanical Presses, O.B.I.	31.1(a)	28.5(a)	33.2(a)	17.5(a)	2.2	1.1	27.7	[illegible]	[illegible]3.9	10.4
Other Mechanical Presses					8.6	18.1				
Headers and Upsetters	8.2	8.7	10.6	9.2	14.8	13.2	4.[illegible]	[illegible]	[illegible].2	3.7
Forging Machines (except Presses)	2.7	3.8	3.0	4.2	6.2	7.0	12.0	13.6	3.1	4.2
Metal Container – making Machines	16.7	17.0	23.6	12.0	22.8	32.9	(d)	(d)	(d)	(d)
Metal Forming Machines, N.E.C.	6.1	9.3	6.5	8.1	44.7	46.5	92.4(e)	83.1(e)	57.6(e)	49.1(e)
Metalworking Machines, N.E.C.	39.2	63.6	67.0	54.2						
Metal Forming Mach. Tools under $2,500 (b)	2.9	3.6	4.2	4.3	6.4	7.2	7.1	6.1	4.2	3.7
Used and Rebuilt Machines	14.5	15.8	15.6	14.9	13.6	14.2	18.6	22.6	12.5	19.2
Parts (c)	66.3	64.1	63.3	63.7	91.2	92.9	134.7	167.8	160.5	113.4

N.E.C. – Not Elsewhere Classified.

(a) Included in the respective metal forming and metalworking classifications for years prior to 1978.
(b) Under $1,000 for years prior to 1978.
(c) Chucks, chuckholders, tool holders and their parts and work holding, positioning equipment and other attachments and accessories are not included after 1971.
(d) Included in "Metal Forming Machines, N.E.C."
(e) From 1980 forward "Die Casting Machines & Parts" are included.

Sources: U.S. Bureau of the Census, "EM 522."

U.S. EXPORTS OF METAL CUTTING MACHINE TOOLS AND PARTS
By Machine Classification, 1984 and 1985
(Value in Thousands of Dollars)

Machine Classification	1984		1985	
	Units	Value	Units	Value
GRAND TOTAL	43,339	$445,975(a)	36,350	$494,646(a)
Complete New Machines	40.648	$223,490	32,729	$242,479
Gear Hobbers and Shapers	25	2,989	20	3,370
Gear Cutting Machines, N.E.C.	34	9,020	48	13,669
Vertical Mach. Ctrs. ATC, NC, Y – Axis Travel 26" or Less	37	2,880	20	1,407
Vertical Mach. Ctrs. ATC, NC, Y – Axis Travel Over 26"	2	323	7	2,598
Horizontal Machining Centers, ATC, NC	38	10,482	29	8,041
Machining Centers, NC, N.E.C.	40	4,894	100	8,956
Single Station and Multi – Station Transfer Machines	9	4,119	9	2,505
Way Type Machines (Unit Heads)	6	1,074	6	1,844
Horiz. Boring – Drilling – Milling Machines, Table Type, NC	8	1,746	16	5,397
Horiz. Boring – Drilling – Milling Machines, NC, N.E.C.	7	1,630	0	0
Vertical Boring – Drilling – Milling Machines, NC	13	2,701	10	4,393
Horiz. Boring – Drilling – Milling Machines, non – NC	12	1,155	21	2,062
Vertical Boring – Drilling – Milling Machines, non – NC	106	2,071	30	974
Drilling Machines, NC	7	1,446	18	2,357
Drilling Machines, Multi – Spindle, non – NC	38	4,887	24	1,762
Drilling Machines, Radial, non – NC	9	203	54	463
Drilling Machines, Upright, Single Spindle, non – NC	10	84	11	298
Drilling Machines, non – NC, N.E.C.	158	3,694	90	2,011
Milling Machines, NC	57	17,770	11	5,308
Milling Machines, Profiling, Dupl. & Die Sinking, non – NC	21	325	49	851
Milling Machines, Knee Type, non – NC	5	159	5	118
Milling Machines, Bed Type, non – NC	4	332	16	7,812
Milling Machines, non – NC, N.E.C.	122	4,084	252	5,212
Vertical Boring Machines, incl. VTL's, NC	10	2,145	19	1,971
Vertical Boring Machines, incl. VTL's, non – NC	56	3,779	62	2,500
Boring Machines, NC, N.E.C.	3	151	6	731
Boring Machines, non – NC, N.E.C.	51	2,268	83	5,296
Horizontal Lathes, NC, Less Than 25 HP	96	7,276	100	7,523
Horizontal Lathes, NC, 25 – 50 HP	9	1,007	23	3,089
Horizontal Lathes, NC, Over 50 HP	9	2,179	15	4,677
Horizontal Engine & Toolroom Lathes, non – NC	124	2,655	142	2,167
Automatic Chucking Lathes, Single Spindle, non – NC	15	2,981	9	540
Automatic Chucking Lathes, Multi – Spindle, non – NC	40	4,778	20	1,205
Automatic Bar Machines, Single Spindle, non – NC	24	736	18	690
Automatic Bar Machines, Multi – Spindle, non – NC	45	3,789	26	1,854
Horizontal Lathes, non – NC, N.E.C.	306	3,785	346	6,792
Vertical Lathes, excl. VTL's, NC	16	2,547	88	10,417
Vertical Lathes, excl. VTL's, non – NC	220	7,692	243	13,043
Grinding, Polishing, Honing & Lapping Machines, NC	66	7,433	51	7,838
Gear Tooth Grinding & Finishing Machines, non – NC	25	5,262	37	3,402
Tool & Cutter Grinding Machines, non – NC	125	2,814	150	8,449
Honing & Lapping Machines, non – NC	197	2,444	211	3,363
Grinding Machines, Flat Surface Reciprocating Table, non – NC	73	2,254	86	2,032
Grinding Machines, Flat Surface, non – NC, N.E.C.	136	7,561	275	10,622
External Grinding Machines, non – NC	27	3,854	44	5,124
Internal Grinding Machines, non – NC	15	1,726	10	1,961
Grinding, Polishing & Buffing Machines, non – NC, N.E.C.	128	10,059	137	8,950
Grinding Machines, non – NC, N.E.C.	232	8,531	401	8,250

Footnotes are at the end of the Table.

(Continued)

U.S. EXPORTS OF METAL CUTTING MACHINE TOOLS AND PARTS

By Machine Classification, 1984 and 1985

(Value in Thousands of Dollars)
(Continued)

Machine Classification	1984		1985	
	Units	Value	Units	Value
Traveling Wire Electrical Discharge Machines	20	$ 791	1	$ 90
All Other Electrical Discharge Machines	80	2,786	117	5,008
Spark Erosion, Ultrasonic & Electrolytic Machines, NC	1	82	6	185
Spark Erosion, Ultrasonic & Electrolytic Machines, non-NC	110	2,417	41	1,711
Metal Cutting Machine Tools, NC, N.E.C.	43	3,646	44	2,781
Sawing & Cut-off Machines, non-NC	469	9,560	490	10,643
Broaching Machines, non-NC	14	1,111	14	1,025
Metal Cutting Machine Tools, non-NC, N.E.C.	338	15,737	270	7,427
Metal Cutting Machine Tools, Less Than $2,500	36,757	9,515	28,298	9,648
Metal Cutting Machine Tools, Used or Rebuilt	2,691	26,730	3,621	43,449
Parts	—	195,755	—	208,718

N.E.C. – Not Elsewhere Classified.

(a) The data may not add to totals due to rounding.

Source: U.S. Bureau of the Census "EM 522."

U.S. EXPORTS OF METAL FORMING MACHINE TOOLS AND PARTS

By Machine Classification, 1984 and 1985

(Value in Thousands of Dollars)

Machine Classification	1984		1985	
	Units	Value	Units	Value
GRAND TOTAL	7,490	$288,955(a)	9,354	$277,607(a)
Complete New Machines	6,987	$149,967	8,792	$157,974
Die Casting Machines & Parts	—	12,261	—	13,642
Metal Forming Machine Tools, Less Than $2,500	4,277	2,891	5,621	3,535
Punching & Shearing Machines, incl. Combination, NC	49	8,510	44	4,092
Shearing Machines, non-NC	99	1,895	45	4,023
Punching & Combination Punching & Shearing Mach., non-NC	421	12,193	507	10,024
Bending, Folding, Straightening & Flattening Machines, NC	100	4,035	124	9,337
Press Brakes, non-NC	31	738	28	577
Bending Rolls, Ram & Press Bending Machines, non-NC	16	520	14	462
Bending, Folding, Str. & Flattening Machines, non-NC, N.E.C.	439	14,121	532	19,948
Mechanical Presses, non-NC	280	19,309	207	15,810
Hydraulic Presses, Vertical, Single Action, non-NC	19	2,638	34	2,779
Hydraulic & Pneumatic Presses, non-NC, N.E.C.	373	14,088	723	23,062
Headers & Upsetters, non-NC	47	7,526	61	8,279
Forging Machines, non-NC, N.E.C.	93	4,246	122	3,942
Metal Forming Machine Tools, non-NC, N.E.C.	743	44,954	730	38,427
Metal Forming Machine Tools, Used or Rebuilt	503	9,110	562	8,533
Parts	—	129,878	—	111,100

N.E.C. – Not Elsewhere Classified.

(a) The data may not add to totals due to rounding.

Source: U.S. Bureau of the Census, "EM 522."

U.S. FOREIGN TRADE IN MACHINE TOOLS AND PARTS

1958 to Date

(Millions of Dollars)

	Exports of Domestic Merchandise (Value at U.S. Port)			Imports for Consumption (Value in Foreign Country)		
Year	TOTAL	Metal Cutting	Metal Forming	TOTAL	Metal Cutting	Metal Forming
1958	$ 148.8	$100.5	$ 48.3	$ 28.1	$ 17.6	$ 10.5
1959	135.0	82.2	52.8	32.5	23.8	8.7
1960	192.5	127.8	64.7	35.7	26.3	9.4
1961	270.2	191.6	78.6	32.4	22.6	9.8
1962	303.9	205.3	98.6	37.5	28.4	9.1
1963	220.6	144.9	75.7	45.1	33.4	11.7
1964	300.8	204.8	96.0	45.6	38.1	7.5
1965	287.2	191.6	95.6	68.9	58.9	10.0
1966	273.6	176.3	97.3	137.4	121.2	16.2
1967	294.5	199.6	94.9	203.7	174.8	28.9
1968	286.0	178.2	107.8	191.3	166.1	25.2
1969	323.5	201.1	122.4	182.6	153.4	29.2
1970	403.9	268.8	135.1	158.5	126.1	32.4
1971	351.0	210.3	140.7	109.6	87.4	22.2
1972	332.1	186.7	145.4	141.8	104.2	37.6
1973	443.0	248.7	194.3	211.6	164.6	47.0
1974	566.5	320.8	245.7	330.3	261.3	69.0
1975	705.9	417.3	288.6	382.4	303.0	79.4
1976	682.7	362.7	320.0	383.3	293.6	89.7
1977	579.5	321.4	258.1	482.2	386.7	95.5
1978	738.6	453.7	284.9	832.4	681.6	150.7
1979	878.6	544.9	333.7	1,269.5	1,027.6	241.9
1980	1,099.2	674.6	424.6	1,556.9	1,282.2	274.7
1981	1,445.6	974.2	471.4	1,712.9	1,485.1	227.8
1982	1,002.4	630.5	371.9	1,489.4	1,258.1	231.3
1983	691.9	430.8	261.1	1,100.2	836.9	263.3
1984	734.9	446.0	289.0	1,652.7	1,316.5	336.1
1985	772.2	494.6	277.6	2,110.1	1,685.6	424.5

Note: Machine tool export figures include used and rebuilt machine tools, machine tools designed for home workshops and laboratories, and some metalworking machinery other than machine tools. Some attachments and accessories are included prior to 1972.

Sources: U.S. Bureau of the Census, "EM 522" and "IM 146."

The coverage of exports reported by the Bureau of the Census in its report "EM 522" is more inclusive than that reported as "manufacturers' export shipments." The data include exports by distributors and brokers, rebuilt tools, machine tools designed for workshops, garages, etc. Values include freight, insurance, and other charges from the manufacturers' plants to the point of departure in the United States. Import values exclude import duties, insurance, ocean freight and other charges incidental to the arrival of goods in the United States.

U.S. FOREIGN TRADE IN BORING MACHINES
INCLUDING VERTICAL TURRET LATHES
1966 to Date
(Values in Millions of Dollars)

	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a,b)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (c)
1966	484	$12.1	183	$ 5.3	692	$12.8
1967	435	13.0	177	4.8	937	21.0
1968	383	14.4	147	4.4	1,057	19.4
1969	363	11.7	121	6.2	797	21.0
1970	503	18.6	158	8.1	2,223	22.8
1971	419	11.5	139	3.8	808	11.6
1972	392	11.2	71	3.0	1,083	13.6
1973	427	10.2	NA	3.7	825	14.4
1974	328	14.1	NA	12.0	1,726	28.8
1975	566	19.7	NA	8.1	2,521	41.1
1976	393	16.3	NA	9.8E	3,219	41.0
1977	382	20.3	NA	6.5	4,824	51.7
1978	577	21.7	NA	10.2	1,347	65.9
1979	724	32.4	NA	9.5	1,901	70.7
1980	626	33.2	NA	17.7	2,289	76.9
1981	797	79.4	NA	41.5E	3,158	86.7
1982	303	32.4	NA	14.9	3,140	78.8
1983	193	18.5	NA	D	1,327	44.6
1984	266	17.6	NA	D	844	49.7
1985	247	23.3	NA	D	972	50.4

NA - Not Available. E - Estimate by NMTBA. D - Withheld to avoid disclosure.

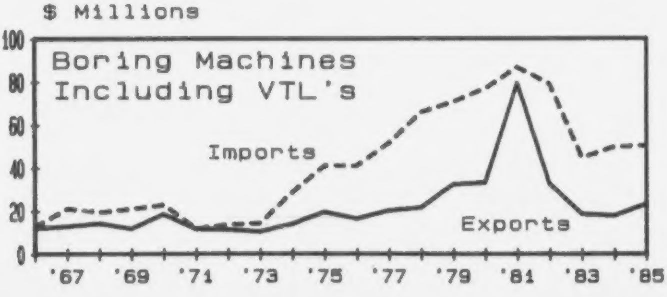
(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.

(b) Manufacturers' export shipments exclude vertical turret lathes.

(c) Generally represents a value in the foreign country and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

Sources: Manufacturers' export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries). All other data; U.S. Bureau of the Census, "EM 522" and "IM 146."

The user should be aware that the minimum valuation of machines included in each of the three series shown on this and following tables has changed over time. "Total Exports" included all machines, regardless of value, until 1973. From 1974 through 1977 the series included only machines above $1,000. The minimum value was increased in 1978 to $2,500. "Manufacturers' Export Shipments" include machines valued less than $1,000 for all years shown. "Imports for Consumption" included all machines regardless of value through 1977. After 1977 only machines valued over $2,500 are included.



U.S. FOREIGN TRADE IN DRILLING MACHINES
1966 to Date
(Values in Millions of Dollars)

	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (b)
1966	3,425	$ 6.1	494	$ 4.6	3,732	$ 5.1
1967	3,427	10.9	685	7.2	5,304	7.6
1968	1,811	6.8	724	4.7	5,403	10.1
1969	2,413	9.5	1,153	5.6	6,146	6.0
1970	2,316	9.5	1,353	5.5	5,690	4.3
1971	2,173	8.5	672	5.0	4,744	2.9
1972	1,788	9.5	587	4.4	8,223	4.3
1973	2,889	12.6	NA	6.0E	8,541	.6
1974	683	12.9	NA	6.2	11,928	8.8
1975	860	13.9	NA	9.3	11,754	9.4
1976	815	13.6	NA	7.8	50,147(c)	15.3(c)
1977	782	14.6	NA	4.2	72,534(d)	19.7(d)
1978	688	13.8	NA	4.1	1,714	18.7
1979	1,762	16.8	NA	4.2	2,515	25.0
1980	546	22.2	NA	12.2	2,253	27.2
1981	566	24.4	NA	12.1	2,238	26.4
1982	349	12.4	NA	3.4	1,317	20.7
1983	233	8.3	NA	5.1	585	9.9
1984	222	10.3	NA	1.2	916	17.9
1985(p)	197	6.9	NA	.5	1,314	32.6

NA - Not Available. E - Estimate by NMTBA. p - Preliminary.

(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.

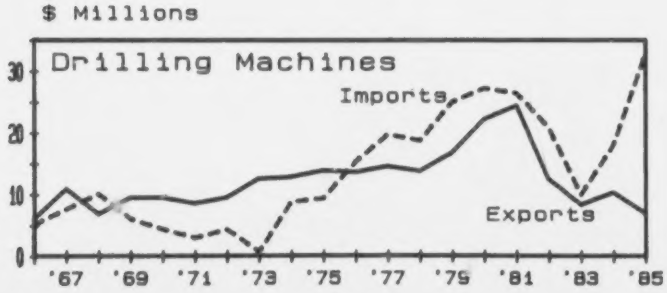
(b) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

(c) Estimated imports from Taiwan and Japan evidently include bench type, home workshop and possibly portable machines which are not by traditional definition machine tools. Estimates by NMTBA indicate actual units may have been as low as 6,000 and dollar value about $12,000.

(d) The average unit value of imports from Norway, India, Japan and Taiwan, as reported by the U.S. Bureau of the Census, was extremely low. Evidently these imports include machines which are not by traditional definition machine tools.

Note: See note on page 147 concerning description of categories.

Sources: Manufactures' export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries). All other data; U.S. Bureau of the Census, "EM 522" and "IM 146."



U.S. FOREIGN TRADE IN GEAR CUTTING AND FINISHING MACHINES

1966 to Date

(Values in Millions of Dollars)

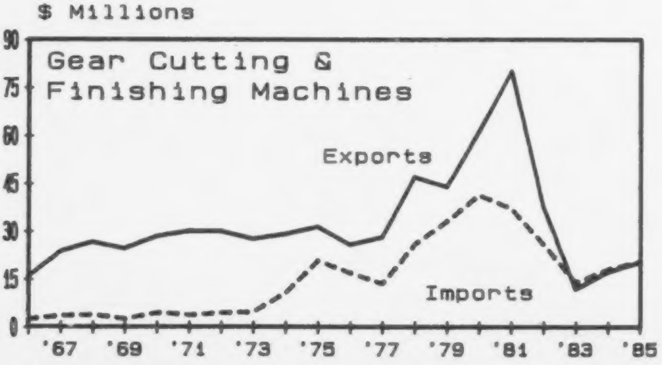
	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (b)
1966	632	$15.8	471	$18.0	261	$ 2.4
1967	852	23.6	692	29.4	279	3.6
1968	1,266	26.6	647	30.8	297	3.8
1969	841	24.4	615	32.2	320	2.5
1970	780	28.4	636	40.0	226	4.5
1971	1,030	30.0	588	36.4	132	3.7
1972	900	30.0	439	30.7	250	4.5
1973	718	27.5	NA	29.0E	134	4.7
1974	546	29.1	NA	40.0E	343	10.7
1975	499	31.4	NA	35.9	365	20.7
1976	552	25.7	NA	19.7E	198	16.9
1977	303	28.1	NA	D	200	13.5
1978	1,069(c)	47.0(c)	NA	D	494(d)	25.9(d)
1979	684(e)	43.8(e)	NA	D	466	33.1
1980	519(e)	61.2(e)	NA	D	415	41.3
1981	698(e)	80.1(e)	NA	D	367	37.0
1982	369(e)	37.4(e)	NA	D	281	25.8
1983	65	11.8	NA	D	153	13.8
1984	84	17.3	NA	D	328	18.1
1985	105	20.4	NA	D	301	20.5

NA - Not Available. E - Estimate. D - Withheld to avoid disclosure.

(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.
(b) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.
(c) Includes machines valued at less than $2,500.
(d) Includes used, rebuilt and machines valued less than $2,500 each.
(e) Data for years 1979 to 1982 may be inaccurate due to a reporting error by exporters.

Note: See note page 147 concerning description of categories.

Sources: Manufacturers export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries). All other data; U.S. Bureau of the Census, "EM 522" and "IM 146."



U.S. FOREIGN TRADE IN GRINDING AND POLISHING MACHINES

1966 to Date

(Values in Millions of Dollars)

	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (b)
1966	7,093	$ 34.6	4,779	$30.4	4,966	$ 12.7
1967	7,128	32.0	4,155	29.7	4,934	16.0
1968	7,679	28.9	3,354	27.7	5,792	17.0
1969	7,906	41.5	3,396	37.0	5,352	16.6
1970	9,154	48.4	4,190	47.0	5,425	15.3
1971	8,094	32.7	3,677	29.4	3,175	11.6
1972	8,900	30.2	3,591	26.8	4,791	12.7
1973	9,883	50.5	NA	39.4	3,972	20.0
1974	3,266	53.0	NA	53.5	7,500	32.4
1975	3,022	53.0	NA	49.5	5,641	34.1
1976	2,537	57.3	NA	56.3	35,411(c)	32.2(c)
1977	4,124	40.1	NA	38.3	46,573(d)	39.2(d)
1978	2,455	80.8	NA	49.8	3,261	68.1
1979	2,487	65.9	NA	42.0	4,233	80.5
1980	1,979	85.1	NA	75.4	5,698	138.6
1981	2,694	126.5	NA	88.2	5,334	137.2
1982	1,877	71.1	NA	69.3	4,530	117.6
1983	930	49.0	NA	54.2	3,262	89.6
1984	999	46.7	NA	34.1	5,249	118.5
1985(p)	1,365	56.6	NA	48.2	6,746	147.9

NA - Not Available. p - Preliminary.

(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.

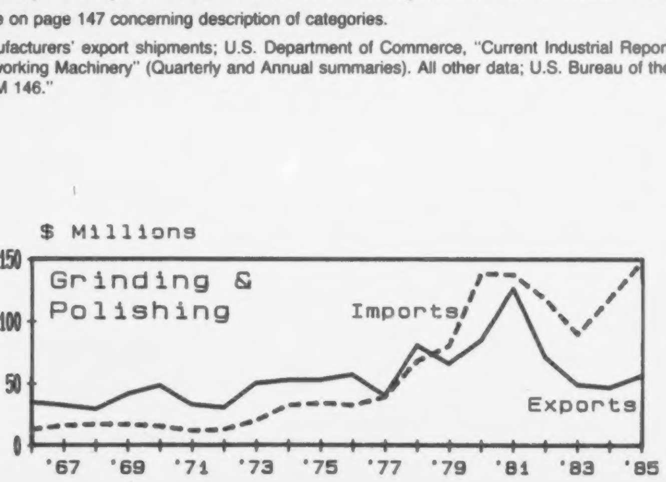
(b) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

(c) Estimated imports from Taiwan and Japan evidently include bench type, home workshop and possibly portable machines which are not by traditional definition machine tools. Estimates by NMTBA indicate actual units may have been as low as 11,500 and the dollar value about $31,000.

(d) The average unit value of imports from Taiwan, as reported by the U.S. Bureau of the Census was extremely low. Evidently these imports include machines which are not by traditional definition machine tools.

Note: See note on page 147 concerning description of categories.

Sources: Manufacturers' export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual summaries). All other data; U.S. Bureau of the Census, "EM 522" and "IM 146."



U.S. FOREIGN TRADE IN LATHES
EXCLUDING VERTICAL TURRET LATHES
1966 to Date

(Values in Millions of Dollars)

	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a,b)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (c)
1966	2,740	$19.8	1,131	$18.6	14,819	$ 37.2
1967	2,611	21.6	1,083	18.7	15,654	47.7
1968	2,161	18.8	683	15.3	11,452	38.1
1969	2,213	22.2	673	16.8	13,241	38.0
1970	2,871	29.2	842	29.3	12,082	27.9
1971	2,481	26.8	774	24.0	6,252	17.8
1972	2,957	21.1	500	19.2	5,578	22.9
1973	3,124	24.3	NA	20.3E	6,058	45.7
1974	1,921	31.0	NA	31.9E	8,187	73.1
1975	2,503	43.6	NA	55.0	6,745	77.0
1976	2,153	47.4	NA	45.9	7,801	77.0
1977	1,953	42.3	NA	35.6	11,527	113.0
1978	1,434	43.7	NA	37.1	12,280	219.3
1979	1,717	53.0	NA	45.5(d)	18,332	353.6
1980	1,107	67.1	NA	50.8(d)	16,710	380.0
1981	1,468	90.0	NA	58.5(d)	15,445	479.8
1982	957	70.4	NA	36.8	11,141	338.6
1983	687	34.9	NA	D	6,662	165.7
1984	904	39.4	NA	D	9,019	268.1
1985	1,030	52.0	NA	D	11,938	350.3

NA-Not Available. E-Estimate by NMTBA. D-Withheld to avoid disclosre.

(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.

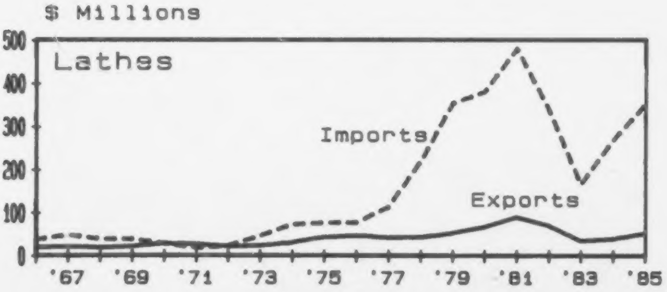
(b) Manufacturers' export shipments include vertical turret lathes.

(c) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

(d) Does not include data for Vertical NC Lathes.

Note: See note on page 147 concerning description of categories.

Sources: Manufacturers' export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries). All other data; U.S. Bureau of the Census, "EM 522" and "IM 146."



U.S. FOREIGN TRADE IN MILLING MACHINES

1966 to Date

(Values in Millions of Dollars)

	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (b)
1966	1,072	$ 8.9	338	$10.2	3,405	$ 17.4
1967	802	11.3	399	16.8	5,715	31.4
1968	848	17.9	304	12.1	5,428	30.6
1969	686	13.6	368	6.7	4,710	26.3
1970	779	19.1	456	12.2	2,047	13.4
1971	681	17.6	276	11.8	986	7.9
1972	589	13.6	416	5.3	1,441	7.5
1973	687	14.0	NA	8.0E	1,760	12.4
1974	776	14.8	NA	10.3	2,313	19.8
1975	804	20.6	NA	20.6	2,567	23.3
1976	799	14.4	NA	16.3E	2,413	25.9
1977	965	21.3	NA	D	3,720	27.9
1978	1,026	30.6	NA	D	3,364	47.7
1979	1,040	23.4	NA	20.1	6,650	83.1
1980	360	19.2	NA	27.9	11,573	138.1
1981	292	37.8	NA	33.4	10,434	124.7
1982	331	22.4	NA	21.0	5,985	87.7
1983	187	13.9	NA	9.0	3,660	52.5
1984	209	22.7	NA	16.1	6,471	83.4
1985(p)	333	19.3	NA	26.8	7,736	133.7

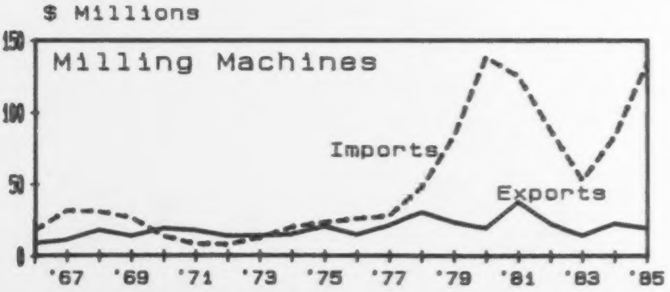
NA - Not Available. D - Withheld to avoid disclosure. E - Estimate by NMTBA. p - Preliminary.

(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.

(b) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

Note: See note on page 147 concerning description of categories.

Sources: Manufacturers' export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries). All other data; U.S. Bureau of the Census, "EM 522" and "IM 146."



U.S. FOREIGN TRADE IN MACHINING CENTERS

1979 to Date

(Values in Millions of Dollars)

	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (b)
1979(c)	259	$45.4	NA	D	552	$ 39.6
1980	313	56.7	NA	$57.9	957	93.4
1981	316	53.4	NA	43.0	2,007	195.7
1982	195	34.0	NA	D	1,873	188.9
1983	102	13.3	NA	D	1,936	164.9
1984	117	18.6	NA	10.2	2,911	248.0
1985(p)	156	21.0	NA	20.0	4,188	330.0

NA - Not Available. D - Withheld to avoid disclosure. p - Preliminary.

(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.

(b) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

(c) Data not available prior to 1979, Machining Centers had been included in "Other" category.

Sources: Manufacturers' export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries). All other data; Bureau of the Census, "EM 522" and "IM 146."

U.S. FOREIGN TRADE IN "OTHER" METAL CUTTING MACHINE TOOLS (c,d)

1962 to Date

(Values in Millions of Dollars)

	Exports of Domestic Merchandise				Imports for Consumption	
	Total Exports		Manufacturers' Exports Shipments (a)			
Year	Units	Value at U.S. Port	Units	Value F.O.B. Factory	Units	Customs Import Value (b)
1962	5,704	$ 32.4	2,667	$ 31.8	5,669	$ 4.4
1963	9,636	25.4	3,382	16.7	4,849	5.6
1964	8,487	34.6	3,167	36.3	5,965	6.7
1965	9,300	44.8	2,547	39.5	8,434	9.7
1966	10,692	38.5	4,029	39.5	26,340	17.1
1967	9,324	42.7	2,846	37.4	20,533	26.1
1968	11,635	22.3	2,250	26.2	13,550	23.1
1969	9,869	29.5	3,080	30.7	10,832	22.4
1970	11,777	53.0	3,464	43.7	18,509	16.4
1971	10,550	21.9	2,728	22.8	20,167	15.5
1972	9,201	21.8	3,073	23.2	20,704	17.1
1973	14,554	55.5	NA	63.8	9,251	23.3
1974	27,309	90.6	NA	78.0	26,444	35.5
1975	52,902	145.7	NA	146.7	21,266	42.5
1976	98,545	99.1	NA	90.7	42,064	37.1
1977	91,551	80.6	NA	66.4	74,175	53.3
1978	107,823	115.5	NA	92.0	465,218	136.5
1979	105,962	111.7	NA	74.0	597,946	147.5
1980	53,943	150.6	NA	173.2	582,050	169.7
1981	70,191	232.1	NA	168.7	901,398	204.5
1982	48,525	123.4	NA	49.2(e)	1,174,244	199.2
1983	38,895	108.4	NA	23.2(e)	1,753,390	175.7
1984(r)	40,538	77.6	NA	14.0(e)	1,331,381	252.8
1985(p)	32,917	86.3	NA	17.6(e)	1,035,677	309.3

NA - Not Available. p - Preliminary. r - Revised.

(a) Complete new machines as shipped including accessories, etc., ordered and shipped with the machines; excludes home workshop tools, etc.

(b) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

(c) For 1978 and prior years Machining Centers were included in "Other". After 1979 Machining Centers are classified separately.

(d) Beginning in 1980 "Used and Rebuilt" machine tools are included in Total Exports and Imports.

(e) Does not include data for Station Type Machines.

Note: See note on page 147 concerning description of categories.

Sources: Manufacturers' export shipments; U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries). All other data; U.S. Bureau of the Census, "EM 522" and "IM 146."

U.S. FOREIGN TRADE IN METAL FORMING MACHINES AND PARTS

1966 to Date

(Millions of Dollars)

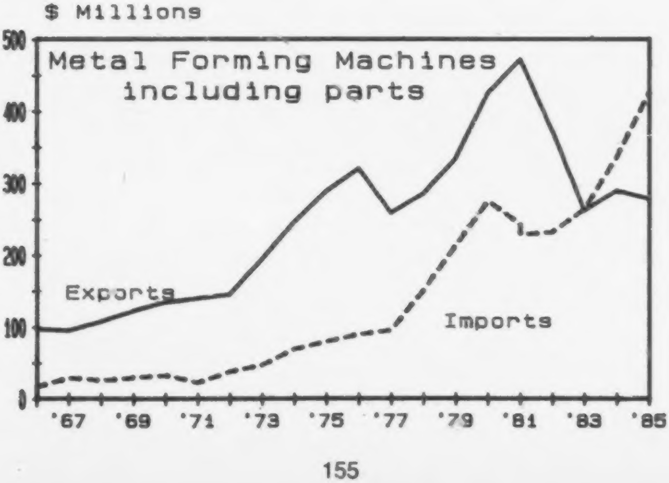
	Exports of Domestic Merchandise (Value at U.S. Port)								Imports for Consumption
Year	Total	Presses	Bending and Forming	Punching and Shearing	Forging Machines	Other New(b)	Used	Parts	Customs Import Value (a)
1966	$ 97.3	$22.5	$11.2	$ 9.8	$ 6.0	$ 22.6	$ 4.9	$ 20.3	$ 16.2
1967	94.9	22.5	13.6	6.4	6.6	20.5	5.0	20.3	28.9
1968	107.8	33.9	10.2	5.9	5.5	25.4	3.6	23.3	25.2
1969	122.4	28.3	14.1	9.5	6.9	31.2	4.4	28.0	29.2
1970	135.1	25.9	11.0	6.5	8.3	34.2	6.1	43.1	32.4
1971	140.3	29.0	12.9	5.6	12.0	38.2	7.0	35.7	22.2
1972	145.4	34.0	11.9	5.9	11.2	37.6	11.0	33.7	37.6
1973	194.3	41.7	16.3	5.0	13.7	54.2	14.1	49.2	47.0
1974	245.7	58.6	11.3	9.4	10.8	64.9	14.5	66.3	69.0
1975	288.6	66.0	22.9	13.8	12.5	93.5	15.8	64.1	79.4
1976	320.0	80.1	26.0	20.2	13.5	101.3	15.6	63.3	89.7
1977	258.1	46.6	25.6	15.4	13.4	78.5	14.9	63.7	95.5
1978	284.9	32.3	39.2	13.7	21.0	73.9	13.6	91.2	150.7
1979	333.7	51.8	45.7	22.3	7.0	99.8	14.2	92.9	241.9
1980	424.6	69.7	44.5	44.8	16.4	95.9	18.6	134.7	274.7
1981	471.4	79.4	46.0	44.9	21.3	89.3	22.6	167.8	227.8
1982	371.9	53.8	35.1	32.9	15.3	61.7	12.5	160.5	231.3
1983	261.1	30.0	19.7	18.1	7.9	52.8	19.2	113.4	263.3
1984	289.0	36.0	19.4	22.6	11.8	60.1	9.1	129.9	336.1
1985	277.5	41.7	30.3	18.1	12.2	55.6	8.5	111.1	424.5

(a) Generally represents a value in the foreign country, and therefore excludes U.S. import duties, freight, insurance, and other charges incurred in bringing the machines to the United States.

(b) Beginning in 1980 "Die Casting Machines" are included.

Note: See note on page 147 concerning description of categories.

Source: U.S. Bureau of the Census, "EM 522" and "IM 146."



U.S. MANUFACTURERS' EXPORT SHIPMENTS OF METAL FORMING MACHINE TOOLS (a)

Units and Value, 1959 to 1972, Value 1973 to Date

(Values in Millions of Dollars)

Year	Total		Presses		Bending and Forming		Punching and Shearing		Forging		Other (b)	
	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value	Units	Value
1959	2,166	$ 31.3	714	$15.1	793	$ 4.1	226	$ 3.0	96	$ 5.3	337	$ 3.8
1960	2,716	47.3	893	23.3	913	5.6	307	5.1	173	9.0	430	4.2
1961	2,758	55.2	934	30.7	930	4.7	283	6.8	166	8.9	445	4.1
1962	3,026	59.6	1,032	32.7	971	5.4	322	5.5	203	10.9	498	5.1
1963	2,955	42.3	943	20.1	1,135	7.6	362	6.5	112	4.7	403	3.4
1964	3,533	47.2	1,006	21.3	1,609	7.3	314	5.0	152	8.4	452	5.2
1965	3,338	44.1	751	18.4	1,600	5.6	284	4.3	148	8.4	555	7.5
1966	3,029	46.5	840	17.9	1,421	9.4	322	3.2	103	6.6	523	9.5
1967	2,824	50.2	962	24.5	933	5.6	324	5.9	98	6.3	507	7.9
1968	3,050	46.9	872	23.7	1,382	5.7	316	4.9	111	5.4	369	7.2
1969	3,380	39.9	943	14.3	1,503	5.1	536	6.5	141	6.1	257	7.9
1970	3,574	47.0	1,047	17.4	1,539	5.5	560	5.1	161	11.2	267	7.7
1971	4,491	51.9	915	22.3	1,287	5.7	461	3.7	186	13.0	1,642	7.1
1972	3,088	50.2	838	18.8	1,382	5.8	401	3.8	152	14.5	315	7.3
1973	NA	54.5	NA	21.2	NA	6.2	NA	3.4	NA	13.2	NA	10.5
1974	NA	78.4	NA	D	NA	15.7	NA	8.3	NA	D	NA	18.6
1975	NA	98.6	NA	D	NA	14.9	NA	14.7	NA	D	NA	16.8
1976	NA	105.8	NA	D	NA	16.5	NA	17.4	NA	D	NA	16.8
1977	NA	71.7	NA	D	NA	13.5	NA	16.6	NA	D	NA	12.9
1978	NA	112.8	NA	D	NA	17.4	NA	14.7	NA	D	NA	18.7
1979	NA	112.0	NA	27.7	NA	24.5	NA	16.8	NA	D	NA	D
1980	NA	152.0	NA	35.2	NA	34.5	NA	32.6	NA	D	NA	D
1981	NA	156.7	NA	43.1	NA	29.8	NA	29.5	NA	D	NA	D
1982	NA	118.4	NA	36.6	NA	19.6	NA	16.2	NA	D	NA	D
1983	NA	54.3	NA	13.6	NA	13.9	NA	9.8	NA	D	NA	D
1984(r)	NA	62.7	NA	15.2	NA	14.4	NA	6.8	NA	D	NA	D
1985(p)	NA	82.1	NA	15.4	NA	15.8	NA	20.3	NA	13.0	NA	17.4

NA - Not Available. D - Withheld to avoid disclosure. p - Preliminary. r - Revised.

(a) Complete new machines as shipped, including accessories, etc., ordered and shipped with the machines, f.o.b. factory.

(b) Some metalworking machines, other than metal forming type machines, are included prior to 1968.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

The export figures for machine tools shown in this table and in tables and graphs in Chapter 4 are substantially lower than those on the preceding pages. This is so for several reasons: first, the data for Manufacturers' Exports cover only new and complete machine tools; second, they represent the manufacturer's selling price at the factory (F.O.B.); third, they exclude machine tools which are sold domestically but exported later by the buyer. The two sources for the tables mentioned above, NMTBA (Chapter 4) and the "Current Industrial Reports" (above), differ although they are based on the same sources. The reasons are the extent of coverage and different reporting practices. See Chapter 4 Introduction for a detailed explanation.

U.S. MANUFACTURERS' EXPORT SHIPMENTS OF NEW MACHINE TOOLS (a)

Units and Value, 1959 to Date

(Values in Millions of Dollars)

Year	Total (b)		Metal Cutting		Metal Forming (b)	
	Units	Value	Units	Value	Units	Value
1959	9,867	$ 80.8	7,701	$ 49.5	2,166	$ 31.3
1960	13,203	157.5	10,487	110.2	2,716	47.3
1961	14,080	207.2	11,322	152.0	2,758	55.2
1962	14,520	216.1	11,494	156.5	3,026	59.6
1963	15,109	144.4	12,154	102.1	2,955	42.3
1964	14,110	198.6	10,577	151.4	3,533	47.2
1965	12,475	171.3	9,137	127.1	3,338	44.1
1966	14,634	173.2	11,425	126.7	3,209	46.5
1967	12,861	194.1	10,037	143.9	2,824	50.2
1968	11,462	174.5	8,109	121.2	3,353	53.3
1969	13,083	181.5	9,406	135.2	3,677	46.3
1970	15,061	238.8	11,099	185.8	3,962	52.9
1971	13,634	191.0	8,854	133.2	4,780	57.7
1972	12,093	171.1	8,677	112.6	3,416	58.5
1973	NA	224.7	NA	170.2	NA	54.5
1974	NA	310.2	NA	231.8	NA	78.4
1975	NA	423.6	NA	325.0	NA	98.6
1976	NA	352.3	NA	246.5	NA	105.8
1977	NA	279.1	NA	207.5	NA	71.7
1978	NA	371.0	NA	258.2	NA	112.8
1979	NA	395.6	NA	283.5	NA	112.0
1980	NA	630.8	NA	482.3	NA	148.5
1981	NA	675.0	NA	518.3	NA	156.7
1982	NA	427.5	NA	309.1	NA	118.4
1983	NA	212.3	NA	158.0	NA	54.3
1984(r)	NA	179.9	NA	117.2	NA	62.7
1985(p)	NA	265.3	NA	183.3	NA	82.1

NA - Not Available. p - Preliminary. r - Revised.

(a) Complete machines as shipped, including accessories, etc., ordered and shipped with the machinery at manufacturers' selling price, f.o.b, factory. Excludes rebuilt machines, machines designed primarily for home workshops, laboratories, garages, etc., and parts.

(b) Includes some metalworking type machines other than machine tools prior to 1973.

Note: See note on page 156.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery" (Quarterly and Annual Summaries).

U.S. MANUFACTURERS' EXPORT SHIPMENTS OF SELECTED MACHINE TOOLS

1970 to 1978

(Values in Thousands of Dollars)

Machine Classification	1970	1971	1972	1973	1974	1975	1976	1977	1978
METAL CUTTING									
Boring									
Vertical Boring and Turning Mills, Standard Type	NA	NA	NA	NA	NA	NA	NA	NA	NA
Precision Boring	$ 1,918	$2,089	D	$ 1,036	$ 5,565	$ 4,755	$ 1,973	$ 644	$ 1,260
Gear Cutting									
Gear Hobbers	431	8,749	D	10,988	9,914	9,802	5,076	6,808	9,501
Gear Tooth Finishing	9,176								
Grinding									
External Cylindrical									
Plain	2,816	7,688	$8,535	8,394	15,046	17,796	2,710	14,786	2,844
Roll and Centerless	3,416						19,665		12,205
All Other	10,064								
Surface Grinding	5,175	2,280	D	5,422	5,235	7,426	5,096	6,801	7,829
Special Tool & Cutter Grinding	2,553	2,854	1,996	920	D	3,897	5,897	15,779	4,856
Honing	1,694	1,015	D	1,559	2,077				
Lathes									
Manufacturing and Tool Room (Up to 36")	1,089	1,900	1,789	1,959	4,111	4,985	5,430	3,143	2,010
Automatic Chucking									
Single Spindle	1,487	1,558	1,660	1,518	2,742	8,514	5,744	4,817	10,181
Multiple Spindle	9,502	7,159	3,173	5,229	4,203	4,882	5,493	3,193	
Screw (bar) Machines	7,165	6,637	6,194	6,693	7,474	10,707	7,374	7,813	2,451
Milling									
Profile and Duplicator	5,074	3,062	1,643	2,499	1,645	2,992	D	D	2,325
Broaching	3,096	1,711	541	3,165	2,142	5,891	3,052	D	8,368
Sawing and Cut-off Machines	NA	NA	4,121	4,541	3,402	10,351	6,541	3,399	8,056
Transfer Machines	18,807	6,533	9,755	39,494	31,240	93,541	34,406	12,423	27,988
METAL FORMING									
Power Shearing									
Plate	2,322	765	1,554	2,699	3,303	8,023	7,942	7,944	5,044
Rotary								143	191
Bending and Forming, Power									
Bending Rolls, Sheet & Plate	800	1,799	2,313	2,348	9,194	3,592	3,413	3,936	2,727
Bending Brakes and Folders	1,025								
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mechanical Presses									
Vertical Straight-sided and Arch Frame (Excl. Knuckle Joint)									
Single Action, Single Point, 201 Tons and Over	940	2,256	2,766	1,256	D	5,452	D	D	D
Single Action, Two Point, 500 Tons and Under (a)	1,327								
Hydraulic and Pneumatic Extrusion Presses	7,120	2,194	D	1,905	D	D	D	D	D

NA - Not Available. D - Withheld to avoid disclosing individual companies' data.

(a) Beginning in 1973: Single Action, Two Point, 300 Tons and Under.

Source: U.S. Department of Commerce, "Current Industrial Reports, Series MQ-35W, Metalworking Machinery."

U.S. MANUFACTURERS' EXPORT SHIPMENTS OF METAL CUTTING MACHINE TOOLS

1979 to Date

(Values in Millions of Dollars)

Machine Classification	1979	1980	1981	1982	1983	1984(r)	1985(p)
METAL CUTTING MACHINE TOOLS	$283.5	$482.3	$518.3	$309.1	$158.0	$117.2	$183.3
Boring Machines	9.5	17.7	D	14.9	D	3.5	D
Drilling Machines	4.2	12.2	12.1	3.4	5.1	1.2	.5
Valued under $2,500	.3	.2	.2	D	D	D	D
All other Drilling Machines	3.9	12.0	12.0	D	D	D	D
Gear Cutting Machines	D	D	D	D	D	D	D
Grinding, Polishing, Buffing, Honing & Lapping Machines	42.0	75.4	88.2	69.3	54.2	34.1	48.2
Valued under $2,500	.7	.6	.6	.4	.4	.7	.6
External Cylindrical Grinding							
Plain (incl. angular wheel type) & Universal	6.3	D	10.4	10.3	D	10.6	13.4
Roll, Centerless, & Chuck type grinders	D	D	30.4	16.4	21.5		
All other External types	5.7	D					
Internal Cylindrical Grinding Surface Grinding Machines:							
Rotary & Reciprocating table type	5.4	10.3	10.3	9.2	D	17.9	6.2
All other Surface Grinders	D	2.0	36.5	5.3	2.7		
All other Grinding Machines	D	15.3			5.0		21.4
Honing & Lapping Machines	5.6	18.3		17.6	14.9	5.0	6.5
Polishing & Buffing Machines							
Horizontal NC Turning Machines	16.9	21.6	21.2	17.2	D	10.8	14.1
Vertical NC Turning Machines	D	D	D	2.5	D	0	D
Non-NC Turning Machines	28.7	29.2	37.3	17.1	9.9	5.0	11.0
Valued under $2,500	1.4	1.5	D	D	D		
Engine or Tool Room lathes, swing over cross slide	D	D	3.1	2.2	D		
Turret lathes, horizontal	D	D	6.4	D	D		
Automatic lathes							
Single Spindle	D	D					
Multiple Spindle	10.5	14.7	26.3	D	D		
All other Horizontal lathes	D	D	D	4.6	D		
All other Vertical lathes							
Milling Machines	20.1	27.9	33.4	21.0	9.0	16.1	26.8
Machining Centers	D	57.9	43.0	D	D	10.2	20.0
Drill, Mill, Bore, manual tool change	D	D	D	D	D	D	D
Drill, Mill, Bore, (ATC) Vertical	12.3	18.4	15.0	D	D	4.5	4.9
Horizontal	33.7	36.2	24.4	19.3	D	D	D
All other Machining Centers	D	D	D	D	D	0	D
Station Type Machines	47.4	133.9	111.0	D	D	D	D
Other Metal Cutting Machines	26.6	39.3	57.8	49.2	23.2	14.0	17.6

D - Withheld to avoid disclosure. r - Revised. p - Preliminary.

Source: U.S. Commerce Department, Current Industrial Reports, MQ35W.

U.S. MANUFACTURERS' EXPORT SHIPMENTS OF METAL FORMING MACHINE TOOLS

1980 to Date

(Values in Millions of Dollars)

Machine Classification	1980	1981	1982(r)	1983	1984(r)	1985(p)
METAL FORMING MACHINE TOOLS	$148.5	$156.7	$118.4	$54.3	$62.7	$82.1
Punching, Shearing, Bending and Forming Machines	63.2	59.3	35.7	23.7	21.2	36.3
Punching & Shearing valued under $2,500	.5	.6	.3	.2	.3	.3
Punches, incl. combination Punching & Shearing Machines	21.7	19.6	3.2	8.2	4.8	20.0
Punching Machines fixed position and two axes positioning table			7.0			
Plate Shearing Machines	10.3	9.3	15.7	1.3	1.7	
Other Punching & Shearing						
All Bending & Forming valued under $2,500	1.0	.9	.7	.4	.4	.8
Press Brakes	15.5	16.6	8.7	6.1	13.9	6.8
Bending Rolls						
Rotary Bending & Forming Machines (incl. Rotary Head)						
Ram & Press Bending Machines						
Other Bending & Forming	14.2	12.3	10.2	7.4		8.2
Presses, except forgings	35.1	43.1	36.6	13.6	15.2	15.4
Presses valued under $2,500	.7	.2	.4	.3	D	
Mechanical Presses:						
Open Back Inclinable	D	3.8	D	D	D	7.0
Other Mechanical Presses	22.7	25.0	15.4	5.8	D	
Hydraulic Presses	D	14.3	D	D	D	8.4
Forging Machines	D	D	D	D	D	13.0
Other Metal Forming Machines	D	D	D	D	D	17.4
Thread Rolling	D	D	D	D	D	
Metal Container Making Machinery	NA	NA	10.3(a)	7.5(a)	6.6(a)	7.3
Die Casting	D	D	D	D	D	0.0
Riveting Machines	D	D	D	D	D	0.0
Other Metal Forming Machines	25.7	19.4	7.7	4.4	8.3	10.0

NA - Not Available. D - Withheld to avoid disclosure. r - Revised. p - Preliminary.

(a) "Metal Container Making Machinery" was included with "Other Metal Forming Machines" prior to 1982.

Source: U.S. Commerce Department, Current Industrial Reports, MQ35W.

6

WORLD MACHINE TOOL INDUSTRY

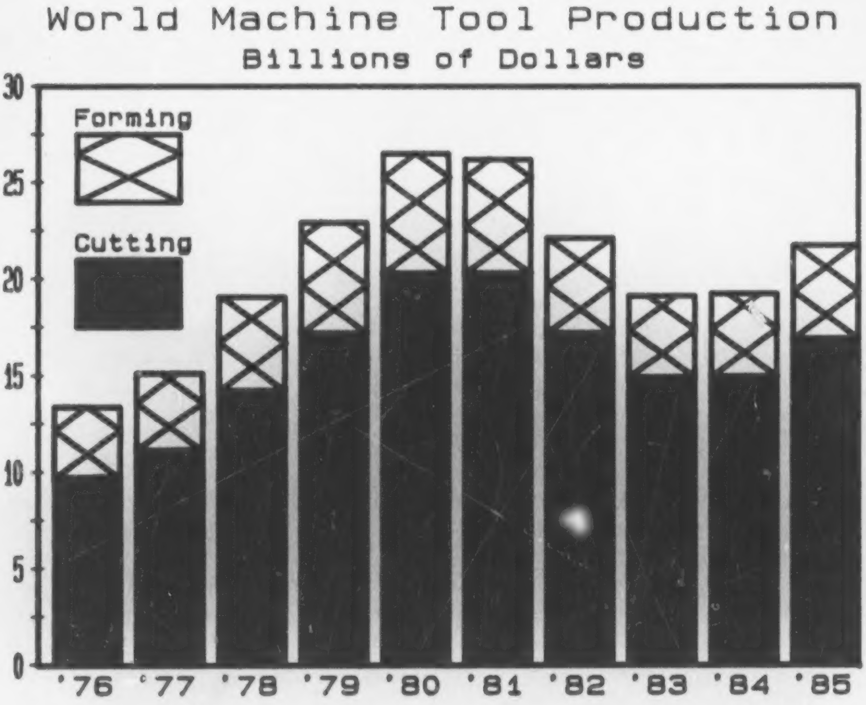
As is the case with many other manufactured products, the machine tool market has rapidly become internationalized over the course of the past fifteen years. During the 1960's the majority of the world's machine tools came from the U.S. and western Europe. This is no longer the case as Japan has become a formidable global competition and many developing nations are developing their domestic machine tool industries. Therefore, in order to accurately reflect the state of the machine tool industry and market in the U.S. it is necessary to put it into a global context. The statistics in this chapter are intended to do this. Using a wide variety of information, obtained primarily from foreign governments and trade associations, this chapter contains a comprehensive review of world-wide machine tool production, exports and imports.

For many years American Machinist magazine has been publishing estimates of the world's machine tool production and trade. These estimates, which cover 36 countries, come from unofficial sources and are revised for previous years when "official" figures become available. Whenever possible, data include complete machine tools only and exclude parts and attachments. However, for some countries it is not clear if the totals include or exclude the value of parts.

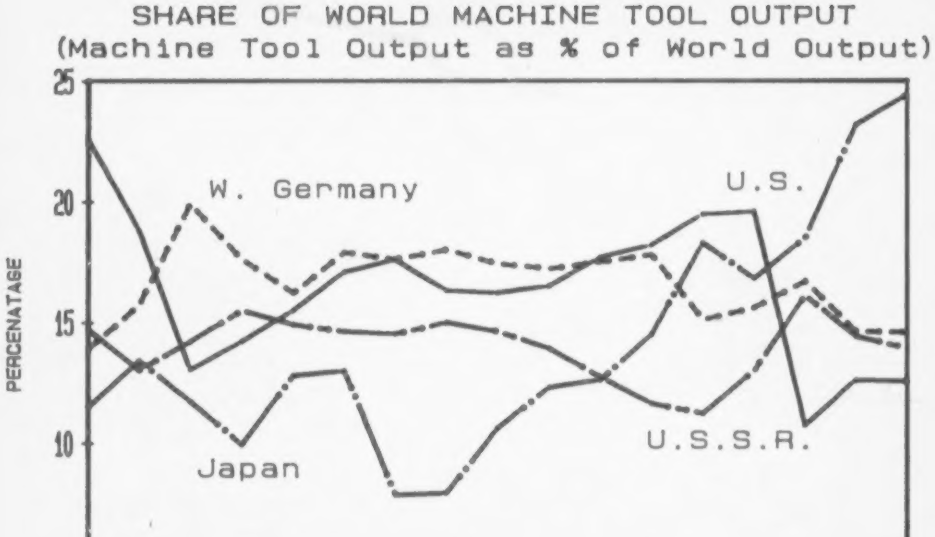
Several years ago, the trade associations of 14 European countries (co-operating through a group called CECIMO) and the United States, Japanese, and Indian trade associations agreed to develop a uniform international statistical reporting system. Under this system, the production, exports and imports of the participating countries are reported for seven major groups of metal cutting machine tools and three major groups of metal forming machine tools. Data by machine type for 1984 are included in this chapter. The machine tool production of the 15 countries totaled about $13.0 billion in 1984.

In the uniform international statistical reporting system for CECIMO, each participating country reports its data in Swiss Francs. In this chapter, these data have been converted into dollars with the conversion rates below the tables. These tables can be identified with the source as International Statistics on Machine Tools.

With the "floating" of many world currencies and the rapid rise of the value of the dollar in recent years, the value measurement of production and trade statistics has become increasingly confusing. Foreign data in this Handbook have been converted into dollars on the basis of the trade conversion factors given in the International Monetary Fund's "International Financial Statistics." It may be useful to convert the dollar-denominated statistics back into national currency when one is attempting to analyse rates of change. The dollar-denominated figures frequently show declines whereas national currency figures may reflect healthy gains.



World Machine Tool Production
Billions of Dollars



SHARE OF WORLD MACHINE TOOL OUTPUT
(Machine Tool Output as % of World Output)

WORLD MACHINE TOOL PRODUCTION, 1969 to Date

(Millions of U.S. Dollars) (a)

Years	Total	Metal Cutting	Metal Forming
1969	$ 7,474.6	$ 5,590.9	$1,833.7
1970	8,263.2	6,069.2	2,142.0
1971	8,148.9	5,951.5	2,192.4
1972	8,965.1	6,433.1	2,532.0
1973	11,548.1	8,393.2	3,154.9
1974	12,656.3	9,190.0	3,466.3
1975	13,640.0	9,844.3	3,795.7
1976	13,387.4	9,672.5	3,714.9
1977	15,126.5	11,079.8	4,046.7
1978	19,088.4	14,192.8	4,889.4
1979	22,925.1	17,170.1	5,755.0
1980	26,501.3	20,268.4	6,232.8
1981	26,209.5	20,274.9	5,934.5
1982	22,071.3	17,171.4	4,957.0
1983(r)	19,147.2	14,862.9	4,284.2
1984(r)	19,250.6	14,912.1	4,338.5
1985(p)	21,759.2	16,864.0	4,895.2

p - Preliminary. r - Revised.

(a) Metal Cutting and Metal Forming may add to less than the total because a breakdown was not available for some countries.

Source: McGraw-Hill, Inc. "American Machinist," Uniform International Statistics on Machine Tools, and statistics reported by individual countries' machine tool associations.

LEADING MACHINE TOOL CONSUMING NATIONS (a)

1985 and 1984

(Millions of U.S. Dollars)

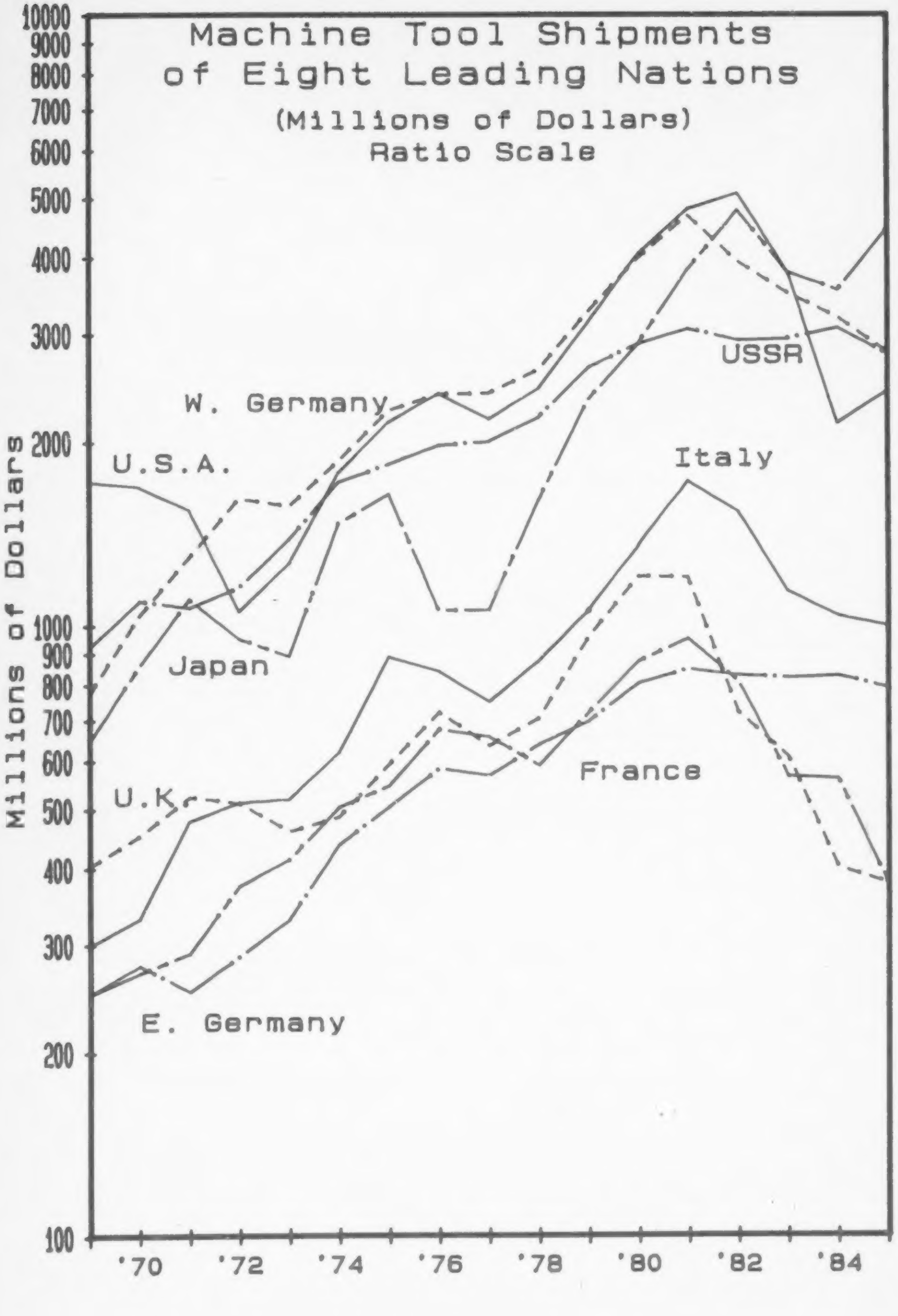
			Percent Change (b)	
Country	1985	1984	U.S. Dollars	Nat'l Currency
1. U.S.S.R.	$4,112.5	$3,873.5	6.2%	5.3%
2. United States	4,015.5	3,370.5	19.1	19.1
3. Japan	3,356.4	2,910.8	15.3	15.8
4. FRG (West Germany)	1,833.9	1,467.8	24.9	29.2
5. Italy	604.5	620.5	- 2.6	6.5
6. France	593.6	427.8	38.8	42.6
7. Canada	569.9	438.2	30.1	37.2
8. PRC (China)	555.8	584.2	- 4.9	20.0
9. United Kingdom	494.0	439.2	12.5	16.0
10. Romania	345.0	372.9	- 7.5	-25.5
11. South Korea	308.9	260.5	18.6	28.0
12. India	297.5	291.7	2.0	11.0
13. Switzerland	288.4	205.8	40.1	46.5
14. Bulgaria	212.5	212.5	0.0	4.7
15. Yugoslavia	202.9	225.7	-10.1	53.5
16. Sweden	181.0	144.9	24.9	29.9
17. Mexico	178.7	163.8	9.1	67.0
18. Poland	165.6	141.2	17.3	48.9
19. Taiwan	165.0	190.2	-13.2	-11.7
20. Spain	160.3	154.4	3.8	9.8
21. GDR (East Germany)	157.9	158.3	- 0.3	4.8
22. Brazil	152.2	124.4	22.4	(c)
23. Czechoslovakia	138.8	148.7	- 6.7	- 5.7
24. Hungary	130.0	130.5	- 0.3	5.3

(a) Machine tool consumption is domestic production plus imports and minus exports.

(b) Percent change calculations based on U.S. dollars include the effect of changes in currency conversion rates. Percent change calculations based on national currency differ for some countries. These percent change values are not influenced by currency conversion rates and, therefore, more realistically reflect changes in machine tool consumption.

(c) A meaningful figure is not available.

Source: McGraw-Hill, Inc., "American Machinist," International Statistics on Machine Tools and NMTBA.


Machine Tool Shipments
of Eight Leading Nations
(Millions of Dollars)
Ratio Scale
Millions of Dollars
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
900
800
700
600
500
400
300
200
100
'70
'72
'74
'76
'78
'80
'82
'84
W. Germany
USSR
U.S.A.
Italy
Japan
U.K.
France
E. Germany

WORLD MACHINE TOOL PRODUCTION AND TRADE, 1985 (ESTIMATED)

(Millions of U.S. Dollars)

	Production			Trade	
	Total	Cutting	Forming	Export	Import
1. Japan	$ 5,316.6	$ 4,406.4	$ 910.2	$2,179.2	$ 219.0
2. FRG (West Germany)	3,168.5	2,238.3	930.2	1,970.6	636.0
3. Soviet Union*	3,015.0	2,409.0	606.1	193.7	1,291.1
4. United States	2,729.4	1,900.5	828.9	452.4	1,738.5
5. Italy	1,115.5	784.1	331.4	707.4	196.4
6. Switzerland	954.7	826.7	128.0	836.4	170.1
7. GDR (East Germany)*	789.3	626.2	163.1	750.2	118.7
8. PRC (China)	453.3(c)	340.0(c)	113.3(c)	34.2(c)	136.7(c)
9. France	444.7	353.8	90.9	208.6	357.5
10. United Kingdom	429.9	349.9	80.0	322.0	386.1
11. Czechoslovakia*	334.4	293.9	40.5	267.1	71.4
12. Romania*	324.1(c)	299.2(c)	24.9(c)	54.9(c)	74.8(c)
13. Taiwan	261.5	235.4	26.2	208.9	112.4
14. Spain	252.9	186.8	66.1	151.5	58.9
15. Yugoslavia	238.6	148.6	89.9	133.4	97.7
16. Canada	216.6	175.3	41.3	104.9	458.2
17. Bulgaria*	192.5(c)	175.0(c)	17.5(c)	140.0(c)	160.0(c)
18. S. Korea	183.9	151.5	32.4	25.0	150.0
19. Sweden	163.3	100.5	62.8	139.4	157.1
20. Hungary*	160.0	135.2	24.8	120.0	90.1
21. India	158.1	126.5	31.6	22.2	161.6
22. Brazil	152.8(c)	137.2(c)	15.6(c)	22.3(c)	21.7(c)
23. Israel	130.0	130.0	0.0	116.0	89.4
24. Poland*	117.6(c)	102.0(c)	15.5(c)	70.5	118.5
25. Austria	116.8	65.2	51.6	127.3	87.3
26. Belgium	95.9	17.3	78.5	129.5	153.8
27. Denmark	49.5	28.3	21.2	25.0	17.4
28. Netherlands	42.1	27.1	15.0	87.2	129.2
29. Australia	39.6(j)	26.4(j)	13.3(j)	4.2(j)	60.9(c)
30. Singapore	34.1(c)	30.9(c)	3.2(c)	83.6	143.1
31. Finland	27.1	3.4	23.7	22.2	64.6
32. Mexico	24.7(c)	18.4(c)	6.3(c)	1.0(c)	155.0
33. Portugal	9.4	4.7	4.7	5.9	18.8
34. Argentina	6.7(c)	3.6(c)	3.1(c)	2.0(c)	8.0(c)
35. South Africa	5.9	4.1	1.8	0.5	75.2
36. Hong Kong	4.2(c)	3.6(c)	0.6(c)	0.9(c)	5.2(c)
Total	21,759.2	16,864.0	4,895.2	9,720.1	7,890.4

(a) Estimated by NMTBA using totals from national trade associations and AM proportional metal cutting and metal forming shares.

(c) Rough estimate from fragmentary data.

(j) Year ended June 30.

(u) Unrevised.

* - Countries with controlled currencies. The Soviet Union and Czechoslovakia at 80% of the official rate; Bulgaria and GDR at 65% of the FRG rate; Poland at 50% of the offical rate. Hungary, PRC (China), and Romania at IMF commercial rates.

Exchange Rates: All free-market currencies have been converted at rates in effect for the period covered. Most estimates for 1985 have been converted at International Monetary Fund rates for the first nine months of 1985 plus estimates of bank transfer rates for the last three months; the rest have been converted at 1985 average rates.

Notes: Whenever possible, data include complete machine tools only, excluding parts and attachments. Individual items may not add to totals due to rounding.

Source: McGraw-Hill, Inc., "American Machinist," International Statistics on Machine Tools, and NMTBA.

WORLD MACHINE TOOL PRODUCTION AND TRADE, 1984 (REVISED)

(Millions of U.S. Dollars)

	Production			Trade	
	Total	Cutting	Forming	Export	Import
1. Japan	$ 4,468.4	$ 3,709.6	$ 758.8	$1,739.2	$ 181.6
2. FRG (West Germany)	2,803.8	1,971.2	832.8	1,818.9	482.9
3. Soviet Union*	2,776.4	2,170.4	606.1	193.7	1,291.1
4. United States	2,423.2	1,712.8	710.4	409.3	1,356.6
5. Italy	996.0	711.4	284.6	558.0	182.5
6. GDR (East Germany)*	789.1	627.0	162.2	743.9	113.1
7. Switzerland	653.3	582.0	71.3	577.9	130.4
8. PRC (China)	481.6(c)	361.2(c)	120.4(c)	37.5(c)	140.1(c)
9. United Kingdom	377.8	313.4	64.4	278.6	340.0
10. France	376.7	299.7	77.0	250.1	301.2
11. Romania*	353.0(u)	323.0(u)	30.0(u)	59.9(u)	79.9(u)
12. Czechoslovakia*	325.2	292.7	32.6	250.9	74.4
13. Taiwan	244.1	219.7	24.4	172.5	118.6
14. Yugoslavia	225.9	142.3	83.6	125.6	125.4
15. Spain	211.5	164.8	46.7	113.3	56.1
16. Canada	199.0	159.3	39.7	119.4	358.6
17. Bulgaria*	192.5(u)	175.0(u)	17.5(u)	140.0(c)	160.0(c)
18. India	164.3	131.4	32.9	13.4	140.8
19. Hungary*	148.1	125.1	22.9	111.1	93.4
20. S. Korea	147.1	121.5	25.6	21.6	135.0
21. Sweden	142.1	85.5	56.6	124.9	127.8
22. Austria	120.9	67.5	53.4	131.8	90.4
23. Poland*	120.7(c)	104.8(c)	16.0(c)	78.5	98.9(c)
24. Brazil	104.7	94.0	10.7	20.2	39.9
25. Israel	92.0	92.0	0.0	80.9	92.8
26. Belgium	77.1	13.9	63.2	104.2	126.8
27. Australia	43.0(j)	28.6(j)	14.4(j)	3.5(j)	47.9(j)
28. Denmark	36.3	21.0	15.3	33.4	56.9
29. Netherlands	34.4	20.3	14.1	81.7	153.3(c)
30. Mexico	24.7(c)	18.4(c)	6.3(c)	1.0(c)	140.1
31. Finland	23.7	3.0	20.7	16.9	62.5
32. Argentina	22.9(c)	12.4(c)	10.5(c)	2.4(c)	33.0(c)
33. Singapore	21.1	19.5	1.6	78.0	171.6
34. Portugal	15.4	7.7	7.7	4.9	20.2
35. South Africa	10.4	7.0	3.5	0.7	132.4
36. Hong Kong	4.2(u)	3.6(u)	0.6(u)	0.9(u)	5.2(u)
Total	19,250.6	14,912.1	4,338.5	8,498.7	7,161.4

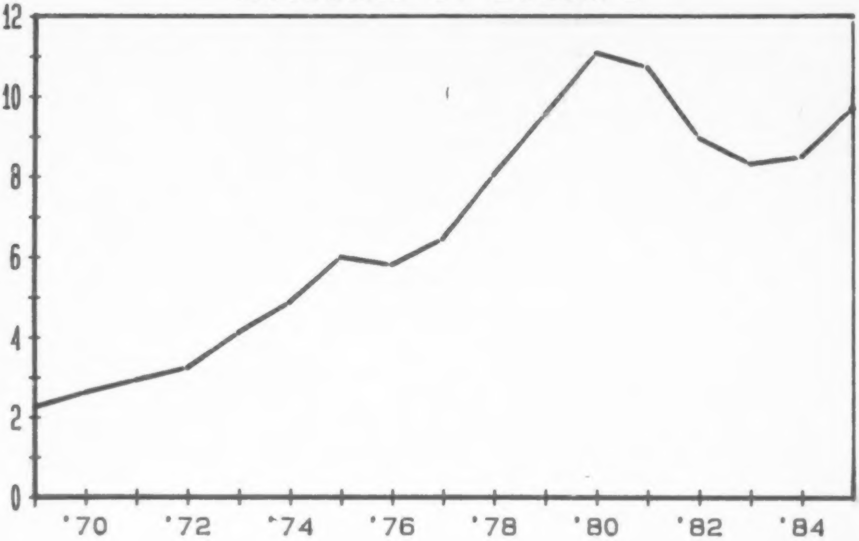
(a) Estimated by NMTBA using totals from national trade associations and AM proportional metal cutting and metal forming shares.
(c) Rough estimate from fragmentary data.
(j) Year ended June 30.
(u) Unrevised.

* - Countries with controlled currencies. The Soviet Union and Czechoslovakia at 80% of the official rate; Bulgaria and GDR at 65% of the FRG rate; Poland at 50% of the offical rate. Hungary, PRC (China), and Romania at IMF commercial Hungary, PRC (China), and Romania at IMF commercial rates.

Exchange Rates: All free-market currencies have been converted at rates in effect for the period covered. Most estimates for 1984 have been converted at International Monetary Fund rates for the first nine months of 1984 plus estimates of bank transfer rates for the last three months; the rest have been converted at 1984 average rates.

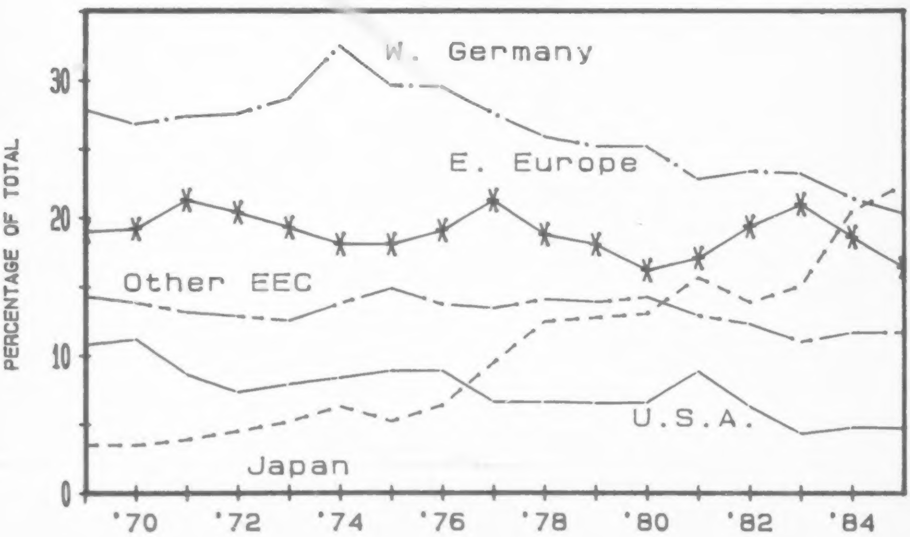
Notes: Whenever possible, data include complete machine tools only, excluding parts and attachments. Individual items may not add to totals due to rounding.

Source: McGraw-Hill, Inc., "American Machinist," and NMTBA.



World Exports of Machine Tools

Billions of Dollars



Share of World Exports

(Machine Tool Exports as a % of World)

6

PRODUCTION, EXPORTS AND IMPORTS OF COMPLETE MACHINE TOOLS

Selected Countries, 1982 TO 1984

(Millions of U.S. Dollars)

	Production			Exports			Imports		
Country	1982	1983	1984	1982	1983	1984	1982	1983	1984
Austria	$ 127.2	$ 94.8	$ 120.9	$ 121.0	$ 127.3	$ 131.8	$ 181.1	$104.9	$ 90.4
Belgium	101.0	82.1	77.1	116.2	96.6	104.2	116.9	114.8	126.8
Denmark	35.5	39.0	36.3	41.8	39.8	33.4	45.0	42.1	56.9
France	564.8	560.0	465.5	295.0	295.2	250.1	479.3	351.1	301.2
India	182.9	184.0	180.5	18.2	21.5	13.6	153.9E	148.5E	141.6E
Italy	1,138.6	1,037.0	996.0(a)	638.1	592.6	557.8(a)	208.5	181.7(a)	182.7
Japan	3,796.4	3,541.1	4,473.3	1,272.5	1,263.6	1,751.5	220.4	171.3	181.4
Netherlands	47.6	29.3	34.4	66.2	56.0	56.2	93.6	73.6	107.5
Portugal	15.7E	12.7E	10.2E	3.1E	2.4E	4.8E	37.7E	23.1E	19.1E
Spain	259.4	193.1	211.5	174.9	99.4	113.3	176.1	86.3	56.1
Sweden	179.9E	156.6E	157.9E	138.3	114.5	124.9	151.2	129.5	127.8
Switzerland	816.1	673.6	653.3	714.2	583.6	577.9	157.6	101.0	130.2
United Kingdom	607.7	398.8	376.9	477.7	319.0	302.4	408.8	294.3	342.4
United States	3,745.0	2,132.7	2,412.0	574.0	359.1	373.0	1,218.0	921.1	1,319.0
West Germany	3,505.0	3,193.5	2,803.7	2,206.4	1,950.4	1,781.9	488.6	452.7	467.0

E - Estimate.

Data does not include polishing, honing or lapping machines.

Note: Exchange rates used to convert the national currencies into U.S. dollars are the annual averages for 1984 published in the International Monetery Fund's "International Financial Statistics," (monthly).

Source: International Statistics on Machine Tools jointly prepared by CECIMO (Comite European de Cooperation des Industries de la Machine Tool); IMTMA (Indian Machine Tool Manufacturers' Association); JMTBA (Japan Machine Tool Builders' Association); and NMTBA (National Machine Tool Builders' Association).

PRODUCTION, EXPORTS AND IMPORTS OF COMPLETE MACHINE TOOLS

Selected Countries, 1984

(Millions of U.S. Dollars)

Country	Production			Exports			Imports		
	Total	Cutting	Forming	Total	Cutting	Forming	Total	Cutting	Forming
Austria	$ 120.9	$ 67.5	$ 53.5	$ 131.8	$ 80.5	$ 51.3	$ 90.4	$ 49.6	$ 40.8
Belgium	77.1	13.9	63.2	104.2	53.5	50.7	126.8	93.2	33.5
Denmark	NA	NA	NA	NA	NA	NA	NA	NA	NA
France	465.5	354.0	111.5	250.1	164.5	85.6	301.2	205.6	95.5
India	180.5	144.5	36.0	13.6	10.6	2.9	141.6E	112.0E	29.7E
Italy	996.0(a)	711.4(a)	284.6	557.8(a)	387.0(a)	170.7	182.7(a)	142.3(a)	40.4
Japan	4,473.3	3,711.2	762.1	1,751.5	1,319.9	431.6	181.4	123.2	58.2
Netherlands	34.4E	NA	NA	56.2	26.8	29.4	107.5	67.0	40.5
Portugal	NA	NA	NA	NA	NA	NA	NA	NA	NA
Spain	211.5	164.9	46.6	113.3	85.2	28.1	56.1	36.6	19.5
Sweden	157.9E	93.1E	64.8E	124.9	72.5	52.3	127.8	93.3	34.5
Switzerland	653.3	581.8	71.5	577.9	523.0	54.9	130.2	NA	NA
United Kingdom	376.9	313.6(b)	63.3(b)	302.4	213.4	89.0	342.4	254.6	87.8
United States	2,412.0	1,722.0	690.0	373.0	223.0	150.0	1,319.0	1,025.0	294.0
West Germany	2,803.7	1,973.0	830.7	1,781.9	1,195.1	586.8	467.0	312.0	155.0

NA - Not Available. E - Estimate.

(a) Data does not include polishing, honing or lapping machines.
(b) Data for NC forming machines is included in "Cutting."

Note: Individual items may not add to Total due to rounding.

Source: International Statistics on Machine Tools.

PRODUCTION OF COMPLETE METAL CUTTING MACHINE TOOLS

Selected Countries, 1984

(Millions of U.S. Dollars)

Country	Total	Boring Machines	Drilling Machines	Gear Cutting & Finishing	Grinding & Polishing	Lathes	Milling Machines	Other Metal Cutting
Austria	$ 67.5	$ 8.0(a)	(a)	$ 0.0	$ 4.2	$ 32.9	$ 10.2	$ 12.0
Belgium	13.9	NA	NA	NA	NA	NA	NA	NA
Denmark	NA	NA	NA	NA	NA	NA	NA	NA
France	354.0	0.8	$ 5.1	(b)	16.5	73.0	68.4	190.2(b)
India	144.5	11.3	9.2	2.6	13.6	57.9	17.7	32.3
Italy	711.4(c)	26.8	21.1	5.7	59.2(c)	96.8	83.1	418.9
Japan	3,711.2	96.8	73.4	48.9	440.8	1,018.6	284.8	1,747.9
Netherlands	NA	NA	NA	NA	NA	NA	NA	NA
Portugal	NA	NA	NA	NA	NA	NA	NA	NA
Spain	164.9	9.1	7.6	0.0	13.2	35.5	47.6	51.8
Sweden (E)	93.1	9.4(a)	(a)	0.0	39.9	24.3	16.3	3.1
Switzerland	581.8	NA	NA	NA	NA	NA	NA	NA
United Kingdom	313.6E(f)	3.6(d)	2.6(d)	(d,e)	36.4E(d)	80.6E	18.7(d)	171.7(f)
United States	1,722.0	104.0(g)	36.0	42.0	335.0	310.0(g)	180.0	715.0
West Germany	1,973.0	75.2	51.3	83.6	321.5	469.1	311.7	660.6

NA - Not Available. E - Estimate.

- (a) Data included in "Boring Machines."
- (b) Data included in "Other Metal Cutting."
- (c) Data includes Grinding machines only.
- (d) Data for both cutting and forming NC Machines are included in "Other Metal Cutting," except for NC Lathes.
- (e) Data for conventional machines withheld.
- (f) Includes NC forming machine data.
- (g) Data for Vertical Turret Lathes & Boring machines included in "Lathes."

Note: Individual items may not add to "Total" due to rounding.

Source: International Statistics on Machine Tools.

PRODUCTION OF COMPLETE METAL FORMING MACHiNE TOOLS

Selected Countries, 1984

(Millions of U.S. Dollars)

Country	Total	Punching & Shearing	Presses, Including Forging	Other Metal Forming
Austria	$ 53.5	$ 1.9	$ 5.9	$ 45.6
Belgium	63.2	NA	NA	NA
Denmark	NA	NA	NA	NA
France	111.5	12.6	30.2	68.7
India	36.0	5.6	16.7	13.6
Italy	284.6	38.1	72.9	173.6
Japan	762.1	79.4	565.1	117.5
Netherlands	NA	NA	NA	NA
Portugal	NA	NA	NA	NA
Spain	46.6	6.2	15.1	25.4
Sweden (E)	64.8	30.2(a)	(a)	34.6
Switzerland	71.5	NA	NA	NA
United Kingdom	63.3(b)	NA	NA	NA
United States	690.0	306.0(c)	205.0(d)	179.0(c,d)
West Germany	830.7	165.9	322.2	342.6

NA - Not Available. E - Estimate.

- (a) Included in "Punching & Shearing."
- (b) Data included in "Other Metal Cutting."
- (c) Data for Bending and Forming machines included in "Punching & Shearing."
- (d) Data for Forging Presses included in "Other Metal Cutting."

Source: International Statistics on Machine Tools.

IMPORTS OF COMPLETE METAL CUTTING MACHINE TOOLS
Selected Countries, 1984
(Millions of U.S. Dollars)

Country	Total	Boring Machines	Drilling Machines	Gear Cutting & Finishing	Grinding & Polishing	Lathes	Milling Machines	Other Metal Cutting
Austria	$ 49.6	$ 6.8(a)	(a)	$ 0.2	$ 10.3	$ 11.2	$11.8	$ 9.3
Belgium	93.2	4.1	$ 4.5	1.6	12.7	18.8	10.1	41.4
Denmark	NA	NA	NA	NA	NA	NA	NA	NA
France	205.6	11.9	19.7	4.5	38.2	58.1	27.8	45.4
India (E)	112.0	14.3	2.6	3.3	35.3	14.9	8.4	33.0
Italy	142.3(b)	7.4	6.8	5.1	22.8(b)	30.7	13.7	55.8
Japan	123.2	5.5	3.7	15.3	55.0	17.2	7.8	18.7
Netherlands	67.0	3.9	5.5	1.4	11.1	18.9	13.6	12.7
Portugal	NA	NA	NA	NA	NA	NA	NA	NA
Spain	36.6	1.0	1.0	2.8	13.6	6.6	2.7	8.9
Sweden	93.3	7.6(a)	(a)	1.5	14.6	19.8	18.7	31.1
Switzerland	NA	NA	NA	NA	NA	NA	NA	NA
United Kingdom	254.6	15.4	14.0	4.3	41.6	81.7	23.3	74.4
United States	1,025.0	40.0(c,d)	18.0(c)	18.0(c)	119.0(c)	278.0(c,d)	83.0(c)	469.0(c)
West Germany	312.0	39.7	28.5	7.7	61.1	77.0	48.5	49.5

NA – Not Available. E – Estimate.

(a) Included in "Boring Machines."
(b) Data does not include Polishing, Honing, or Lapping Machines.
(c) Data for machines valued less than $2,500 is included in "Other Metal Cutting."
(d) Data for Vertical Turret Lathes and Boring machines is included in "Lathes."

Note: Individual items may not add to "Total" due to rounding.

Source: International Statistics on Machine Tools.

IMPORTS OF COMPLETE METAL FORMING MACHINE TOOLS
Selected Countries, 1984
(Millions of U.S. Dollars)

Country	Total	Punching & Shearing	Presses, Including Forging	Other Metal Forming
Austria	$ 40.8	$ 5.2	$10.4	$25.2
Belgium	33.5	6.8	10.5	16.2
Denmark	NA	NA	NA	NA
France	95.5	28.3	29.8	37.5
India (E)	29.7	3.2	20.3	6.2
Italy	40.4	7.4	12.0	21.1
Japan	58.2	5.8	20.7	31.7
Netherlands	40.5	13.1	6.4	21.0
Portugal	NA	NA	NA	NA
Spain	19.5	1.8	3.2	14.5
Sweden	34.5	16.0(a)	(a)	18.5
Switzerland	NA	NA	NA	NA
United Kingdom	87.8	25.3	21.3	41.2
United States	294.0	131.0(b,d)	71.0(c,d)	92.0(b,c,d)
West Germany	155.0	26.0	33.7	95.2

NA – Not Available. E – Estimate.

(a) Included in "Punching & Shearing."
(b) Data for Bending & Forming machines included in "Punching & Shearing."
(c) Data for Forging Presses included in "Other Metal Forming."
(d) Data for machines valued less than $2,500 is included in "Other Metal Forming."

Note: Individual items may not add to "Total" due to rounding.

Source: International Statistics on Machine Tools.

EXPORTS OF COMPLETE METAL CUTTING MACHINE TOOLS
Selected Countries, 1984
(Millions of U.S. Dollars)

Country	Total	Boring Machines	Drilling Machines	Gear Cutting & Finishing	Grinding & Polishing	Lathes	Milling Machines	Other Metal Cutting
Austria	$ 80.5	$ 9.4(a)	(a)	$ 0.0	$ 6.5	$ 49.0	$ 12.0	$ 3.4
Belgium	53.5	1.6	$ 1.3	3.5	2.2	7.6	2.5	34.8
Denmark	NA	NA	NA	NA	NA	NA	NA	NA
France	164.5	2.7	8.6	1.0	52.8	33.3	44.9	21.3
India	10.6	0.4	1.1	0.0	1.1	4.1	3.5	0.4
Italy	387.0(b)	35.9	23.3	2.3	47.2(b)	55.2	47.8	175.3
Japan	1,319.9	37.5	44.3	11.0	113.7	422.4	85.4	605.6
Netherlands	26.8	4.1	1.9	0.1	10.3	3.9	1.6	5.0
Portugal	NA	NA	NA	NA	NA	NA	NA	NA
Spain	85.2	5.1	5.4	0.1	8.4	16.1	39.7	10.2
Sweden	72.5	8.1(a)	(a)	0.2	36.1	14.5	9.9	3.6
Switzerland	523.0	NA	NA	NA	NA	NA	NA	NA
United Kingdom	213.4	10.2	13.0	4.4	49.9	59.2	36.2	40.5
United States	223.0	12.0(c,d)	10.0(c)	17.0(c)	47.0(c)	45.0(c,d)	23.0(c)	69.0(c)
West Germany	1,195.1	99.4	34.4	42.2	267.8	307.5	205.9	237.9

NA – Not Available.

(a) Included in "Boring Machines."
(b) Data does not include Polishing, Honing, or Lapping machines.
(c) Data for machines valued less than $2,500 is included in "Other Metal Cutting."
(d) Data for Vertical Turret Lathes and Boring machines is included in "Lathes."

Note: Individual items may not add to "Total" due to rounding.

Source: International Statistics on Machine Tools.

EXPORTS OF COMPLETE METAL FORMING MACHINE TOOLS
Selected Countries, 1984
(Millions of U.S. Dollars)

Country	Total	Punching & Shearing	Presses, Including Forging	Other Metal Forming
Austria	$ 51.3	$ 2.8	$ 2.9	$ 45.6
Belgium	50.7	12.2	25.9	12.6
Denmark	NA	NA	NA	NA
France	85.6	11.6	18.4	55.6
India	2.9	1.0	1.8	0.2
Italy	170.7	21.1	51.2	98.5
Japan	431.6	82.2	175.3	174.1
Netherlands	29.4	7.0	5.4	17.0
Portugal	NA	NA	NA	NA
Spain	28.1	7.7	9.9	10.5
Sweden	52.3	20.8(a)	(a)	24.3
Switzerland	54.9	NA	NA	NA
United Kingdom	89.0	13.9	28.9	46.1
United States	150.0	42.0(a,c)	36.0(b,c)	72.0(a,b,c)
West Germany	586.8	88.5	144.4	353.8

NA – Not Available.

(a) Data included in "Punching & Shearing."
(b) Data for Forging Presses included in "Other Metal Forming."
(c) Data for machines valued less than $2,500 is included in "Other Metal Forming."

Note: Individual items may not add to "Total" due to rounding.

Source: International Statistics on Machine Tools.

EXPORT MARKET SHARES OF MAJOR MACHINE TOOL PRODUCER COUNTRIES TO SELECTED LARGEST IMPORTER COUNTRIES (a)

(Values in Millions of Dollars and Percent of Total)

Importing Country and Date	Total Exports from 14 Major Producers (b)		Exporting Country															
			United States		West Germany		Japan		Switzerland		Italy		United Kingdom		France		Sweden	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
World																		
1977	$4,855	100.0%	$458	9.4%	$1,772	36.5%	$ 611	12.6%	$498	10.2%	$437	9.0%	$323	6.7%	$269	5.5%	$123	2.5%
1978	6,279	100.0	585	9.3	2,086	33.2	1,017	16.2	659	10.5	596	9.5	426	6.8	383	6.1	139	2.2
1979	7,440	100.0	685	9.2	2,441	32.8	1,229	16.5	792	10.6	690	9.3	474	6.4	459	6.2	176	2.4
1980	7,307	100.0	572	7.8	2,211	30.3	1,388	19.0	793	10.9	618	8.5	590	8.1	426	5.8	NA	NA
1981	7,130	100.0	904	13.1	1,924	27.0	1,618	22.7	672	9.4	569	8.0	491	6.9	314	4.4	NA	NA
1982	5,846	100.0	567	9.7	1,679	28.7	1,203	20.6	647	11.1	437	7.5	406	6.9	236	4.0	NA	NA
1983	4,997	100.0	355	7.1	1,440	28.8	1,178	23.6	603	12.1	426	8.5	263	5.3	242	4.8	NA	NA
Industrial Countries																		
United States																		
1977	$ 422	100.0%	—	—	$ 106	25.0%	$ 111	26.4%	$ 35	8.3%	$ 17	4.1%	$ 47	11.0%	$10	2.5%	$ 18	4.2%
1978	678	100.0	—	—	166	24.6	219	32.3	59	8.7	30	4.4	73	10.8	18	2.6	25	3.7
1979	974	100.0	—	—	191	19.6	365	37.5	71	7.3	41	4.2	96	9.9	26	2.6	32	3.3
1980	1,196	100.0	—	—	220	18.4	515	43.1	87	7.2	47	3.9	123	10.4	26	2.2	31	2.4
1981	1,373	100.0	—	—	165	12.0	746	54.3	74	5.4	34	2.5	142	10.3	24	1.7	NA	NA
1982	1,094	100.0	—	—	148	13.5	514	47.0	66	6.0	32	2.9	105	9.6	9	.9	NA	NA
1983	799	100.0	—	—	101	12.7	407	50.9	57	7.2	28	3.4	52	6.5	15	1.9	NA	NA
West Germany																		
1977	290	100.0	$ 25	8.5%	—	—	23	7.9	80	27.5	53	18.3	23	7.8	27	9.4	16	5.5
1978	381	100.0	31	8.1	—	—	39	10.2	122	32.1	56	14.6	29	7.6	37	9.6	14	3.7
1979	537	100.0	32	5.9	—	—	83	15.4	174	32.5	71	13.2	32	5.9	48	9.0	18	3.3
1980	612	100.0	27	4.4	—	—	108	17.6	192	31.3	80	13.0	47	7.6	46	7.6	NA	NA
1981	515	100.0	33	6.4	—	—	93	18.1	144	28.0	80	15.6	37	7.1	33	6.5	NA	NA
1982	383	100.0	23	6.1	—	—	54	14.2	135	35.2	49	12.9	21	5.5	24	6.2	NA	NA
1983	348	100.0	28	7.9	—	—	60	17.1	127	36.4	42	12.1	14	4.1	19	5.3	NA	NA

Note: Footnotes on final page of table.

(Continued)

EXPORT MARKET SHARES OF MAJOR MACHINE TOOL PRODUCER COUNTRIES TO SELECTED LARGEST IMPORTER COUNTRIES (a)

(Values in Millions of Dollars and Percent of Total)
(Continued)

Importing Country and Date	Total Exports from 14 Major Producers (b)		Exporting Country: United States		West Germany		Japan		Switerzerland		Italy		United Kingdom		France		Sweden	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
France																		
1977	$256	100.0%	$ 11	4.3%	$135	52.8%	$ 2	.9%	$33	12.9%	$38	14.8%	$17	6.5%	—	—	$ 3	1.1%
1978	267	100.0	13	5.0	117	43.8	5	1.9	48	17.9	46	17.3	16	5.9	—	—	6	2.2
1979	342	100.0	22	6.5	145	42.5	10	3.0	58	17.0	55	16.0	22	6.4	—	—	6	1.6
1980	419	100.0	18	4.2	166	39.5	31	7.3	59	14.1	69	16.4	34	8.0	—	—	—	—
1981	393	100.0	26	6.6	161	41.0	27	6.9	49	12.6	67	17.2	21	5.2	—	—	NA	NA
1982	332	100.0	18	5.5	137	41.4	23	6.8	46	13.7	54	16.2	18	5.5	—	—	NA	NA
1983	330	100.0	12	3.5	155	47.0	15	4.6	42	12.7	63	19.2	18	5.4	—	—	NA	NA
United Kingdom																		
1977	223	100.0	27	12.2	90	40.2	12	5.5	27	11.9	19	8.5	—	—	$13	6.0%	10	4.3
1978	356	100.0	50	14.2	149	41.7	24	6.8	36	10.1	28	7.7	—	—	19	5.3	15	4.1
1979	521	100.0	87	16.7	214	41.1	46	8.9	51	9.7	44	8.5	—	—	33	6.3	20	3.8
1980	426	100.0	52	12.1	150	35.3	69	16.1	43	10.0	39	9.3	—	—	19	4.6	NA	NA
1981	328	100.0	60	18.3	111	33.8	54	16.5	34	10.3	25	7.7	—	—	15	4.5	NA	NA
1982	317	100.0	61	19.3	95	30.1	48	15.0	26	8.3	25	7.8	—	—	15	4.6	NA	NA
1983	224	100.0	35	15.8	74	33.1	43	19.1	20	9.1	14	6.1	—	—	11	4.9	NA	NA
Canada																		
1977	109	100.0	63	57.7	13	12.4	7	6.8	2	1.5	6	5.5	10	9.6	2	2.2	2	2.3
1978	136	100.0	82	60.1	15	11.2	9	6.9	2	1.5	10	7.0	10	7.2	4	3.1	3	1.9
1979	180	100.0	105	58.1	19	10.7	14	7.6	2	1.3	13	7.1	16	8.8	4	2.2	5	2.9
1980	227	100.0	119	52.6	24	18.4	30	13.0	4	1.7	12	5.4	27	11.9	4	1.8	NA	NA
1981	341	100.0	232	68.1	24	12.0	29	8.4	5	1.4	15	4.5	26	7.7	4	1.2	NA	NA
1982	139	100.0	74	53.0	18	13.5	14	9.8	7	5.1	9	6.2	12	8.6	1	.9	NA	NA
1983	92	100.0	48	52.3	12	12.7	14	15.2	2	2.5	4	4.6	6	6.6	2	2.6	NA	NA
Switzerland																		
1977	82	100.0	3	4.2	50	61.4	1	1.1	—	—	10	11.8	7	8.1	6	6.8	2	2.2
1978	134	100.0	5	3.5	80	59.6	2	1.5	—	—	17	12.9	11	8.1	12	8.6	3	2.0
1979	157	100.0	7	4.5	92	58.5	4	2.7	—	—	19	12.1	8	5.2	12	7.9	3	1.9
1980	192	100.0	12	6.0	103	53.7	12	6.2	—	—	23	12.1	17	9.0	14	7.5	NA	NA
1981	171	100.0	8	4.8	90	52.3	14	8.3	—	—	24	14.0	11	6.2	15	8.8	NA	NA
1982	145	100.0	7	4.9	82	56.7	12	8.0	—	—	17	11.4	8	5.4	11	7.8	NA	NA
1983	102	100.0	6	6.3	54	53.3	9	8.4	—	—	12	11.6	6	6.2	8	7.5	NA	NA

Note: Footnotes on final page of table.

EXPORT MARKET SHARES OF MAJOR MACHINE TOOL PRODUCER COUNTRIES TO SELECTED LARGEST IMPORTER COUNTRIES (a)

(Values in Millions of Dollars and Percent of Total)
(Continued)

Importing Country and Date	Total Exports from 14 Major Producers (b)		Exporting Country															
			United States		West Germany		Japan		Switzerland		Italy		United Kingdom		France		Sweden	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Japan																		
1977	$ 75	100.0%	$23	30.4%	$ 35	47.4%	—	—	$ 8	10.3%	$ 1	1.8%	$ 1	1.6%	$ 2	3.1%	$1	1.9%
1978	102	100.0	40	39.1	37	36.2	—	—	15	14.6	1	.7	2	2.1	1	1.0	2	1.7
1979	153	100.0	51	33.0	65	42.5	—	—	20	12.9	2	1.0	3	2.2	2	1.3	3	1.8
1980	147	100.0	47	32.0	52	35.7	—	—	33	22.4	3	1.7	4	2.9	2	1.4	NA	NA
1981	151	100.0	49	32.5	49	32.2	—	—	41	27.1	2	1.2	3	2.1	1	2.6	NA	NA
1982	146	100.0	50	33.9	48	33.2	—	—	31	20.9	2	1.3	3	2.0	(c)	1.7	NA	NA
1983	105	100.0	36	34.6	28	27.1	—	—	30	28.8	3	2.4	2	1.8	1	.5	NA	NA
Developing Countries																		
Brazil																		
1977	172	100.0	41	23.7	63	36.8	$ 21	12.1%	6	3.8	21	12.0	12	7.0	3	1.7	1	.7
1978	211	100.0	32	15.0	76	36.0	40	18.8	17	7.9	31	14.7	10	4.8	5	2.3	2	1.0
1979	187	100.0	24	13.0	95	50.6	22	11.9	8	4.4	15	7.8	7	3.8	2	1.2	8	4.3
1980	122	100.0	14	11.4	59	48.4	15	12.4	9	7.4	13	10.4	5	3.9	3	2.4	NA	NA
1981	101	100.0	18	18.1	49	48.6	7	7.3	7	6.8	8	8.3	7	6.6	2	2.1	NA	NA
1982	80	100.0	18	23.0	23	28.1	22	26.8	6	7.6	6	7.4	4	4.7	1	.6	NA	NA
1983	45	100.0	10	21.5	13	27.7	11	24.[illegible]	3	6.2	7	14.9	1	2.9	(c)	.2	NA	NA
Republic of Korea																		
1977	164	100.0	7	4.2	18	10.9	133	81.[illegible]	2	1.4	(c)	.1	2	1.3	1	.6	(c)	.2
1978	323	100.0	24	7.5	39	12.1	231	71.6	9	2.9	NA	NA	8	2.4	7	2.3	NA	NA
1979	376	100.0	34	9.1	85	22.6	212	56.4	8	2.2	4	1.1	14	3.7	13	3.4	1	.4
1980	133	100.0	20	14.8	19	14.5	83	62.5	4	2.7	1	.7	1	.8	3	1.9	NA	NA
1981	71	100.0	14	19.1	10	14.5	38	53.3	5	6.8	(c)	.3	1	2.0	2	2.7	NA	NA
1982	51	100.0	10	20.1	4	7.6	31	60.5	1	2.2	1	2.4	2	4.8	(c)	.8	NA	NA
1983	125	100.0	7	5.9	8	6.4	102	81.6	2	1.9	2	1.8	(c)	.4	1	.7	NA	NA
Spain																		
1977	91	100.0	4	4.7	38	41.4	6	6.4	8	8.6	14	14.9	5	5.4	10	11.0	1	1.1
1978	89	100.0	4	4.3	37	42.0	3	3.9	6	7.1	16	17.9	4	4.7	15	16.6	1	.9
1979	95	100.0	5	5.0	42	44.0	2	1.9	5	5.1	22	22.9	5	5.6	12	12.1	1	.6
1980	74	100.0	5	6.3	25	33.5	3	4.2	5	7.0	11	14.3	8	11.0	14	18.5	NA	NA
1981	169	100.0	14	6.1	107	63.0	15	9.1	4	2.6	15	8.7	4	2.3	8	4.6	NA	NA
1982	86	100.0	5	6.1	45	51.9	6	6.4	4	4.9	10	12.2	4	4.5	9	10.5	NA	NA
1983	61	100.0	2	3.3	26	43.2	3	4.4	4	6.0	8	12.6	2	3.3	14	22.2	NA	NA

Note: Footnotes on final page of table.

EXPORT MARKET SHARES OF MAJOR MACHINE TOOL PRODUCER COUNTRIES TO SELECTED LARGEST IMPORTER COUNTRIES (a)

(Values in Millions of Dollars and Percent of Total)
(Continued)

Importing Country and Date	Total Exports from 14 Major Producers (b)		Exporting Country															
			United States		West Germany		Japan		Switerzerland		Italy		United Kingdom		France		Sweden	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Venezuela																		
1977	$ 75	100.0%	$ 20	27.1%	$16	21.6%	$ 1	1.4%	$ 3	4.5%	$23	31.0%	$ 3	4.3%	$ 1	1.8%	$1	1.1%
1978	85	100.0	27	31.8	16	18.5	5	5.5	2	2.2	21	24.9	3	3.3	4	4.4	1	1.1
1979	88	100.0	46	52.8	8	9.0	4	4.6	2	1.9	21	23.4	3	3.5	(c)	.5	(c)	.5
1980	44	100.0	12	27.8	12	26.6	1	2.9	1	1.2	14	32.5	1	2.8	1	2.1	(c)	NA
1981	28	100.0	12	43.8	2	8.8	2	7.0	(c)	.6	8	29.3	(c)	1.7	(c)	.5	NA	NA
1982	34	100.0	13	38.0	5	13.5	1	3.7	1	2.2	10	29.6	1	1.7	1	3.4	NA	NA
1983	9	100.0	2	24.5	1	15.2	1	9.3	(c)	.6	4	42.9	(c)	2.1	(c)	3.0	NA	NA
Mexico																		
1977	70	100.0	42	60.1	8	10.9	9	12.1	2	2.8	4	6.2	2	3.4	(c)	.5	1	.9
1978	75	100.0	38	50.5	15	20.5	7	9.2	2	3.3	4	5.1	4	4.8	1	0.9	1	1.9
1979	121	100.0	70	58.2	20	16.7	7	5.7	3	2.9	8	6.8	4	3.2	2	1.2	2	1.8
1980	207	100.0	89	42.9	49	23.9	17	8.0	7	3.3	10	4.8	14	6.9	5	2.2	NA	NA
1981	360	100.0	225	62.4	37	10.4	18	4.9	6	1.7	23	6.4	11	3.1	15	4.1	NA	NA
1982	277	100.0	112	40.3	34	12.3	64	23.0	4	1.3	6	2.1	22	7.9	6	2.3	NA	NA
1983	153	100.0	30	19.8	14	9.2	17	11.3	2	1.0	9	5.9	8	5.3	70	45.1	NA	NA
Turkey																		
1977	62	100.0	1	1.0	19	31.0	1	.9	3	5.5	9	14.4	12	19.3	15	23.6	1	1.6
1978	46	100.0	5	10.7	15	33.6	2	5.1	1	1.9	11	23.8	3	6.6	7	15.5	1	1.5
1979	40	100.0	2	3.8	13	31.4	NA	NA	5	12.8	6	15.1	4	9.5	8	19.3	NA	NA
1980	45	100.0	(c)	.7	15	33.5	1	3.1	3	6.4	5	10.5	3	6.5	14	32.4	NA	NA
1981	38	100.0	1	3.5	11	27.9	1	2.6	2	4.0	15	39.1	2	4.1	5	14.1	NA	NA
1982	37	100.0	1	2.5	14	38.3	2	6.0	2	4.3	9	23.5	2	6.3	5	13.9	NA	NA
1983	56	100.0	3	5.2	20	35.4	2	4.0	2	2.9	22	39.9	2	4.5	3	5.2	NA	NA
India																		
1977	48	100.0	4	8.8	24	49.7	1	2.1	8	15.8	(c)	.8	5	9.8	2	3.7	1	2.7
1978	70	100.0	7	9.9	32	45.6	4	5.2	14	20.6	2	3.0	6	8.0	3	4.0	NA	NA
1979	74	100.0	5	6.1	26	34.5	8	10.8	15	20.8	3	4.4	9	12.1	5	6.8	2	2.2
1980	88	100.0	7	8.3	34	39.1	11	12.3	13	14.8	4	4.9	13	15.2	2	1.8	NA	NA
1981	119	100.0	13	11.2	43	35.9	21	17.4	19	15.8	3	2.8	12	10.0	3	2.5	NA	NA
1982	136	100.0	15	10.8	48	35.4	20	14.7	12	8.8	4	2.6	19	14.1	1	.9	NA	NA
1983	113	100.0	4	3.8	39	34.6	34	29.9	13	11.5	4	3.6	12	11.0	2	1.3	NA	NA

Note: Footnotes on final page of table.

EXPORT MARKET SHARES OF MAJOR MACHINE TOOL PRODUCER COUNTRIES TO SELECTED LARGEST IMPORTER COUNTRIES (a)

(Values in Millions of Dollars and Percent of Total)

(Continued)

Importing Country and Date	Total Exports from 14 Major Producers (b)		Exporting Country: United States		West Germany		Japan		Switzerland		Italy		United Kingdom		France		Sweden	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Saudi Arabia																		
1977	$ 45	100.0%	$ 8	16.9%	$ 15	34.1%	$ 1	1.8%	$ 2	5.1%	$ 7	14.9%	$ 2	4.1%	$ 9	19.9%	$ 1	1.2%
1978	33	100.0	9	27.1	8	25.2	3	9.2	2	5.2	6	18.3	2	6.8	1	4.5	(c)	1.3
1979	47	100.0	15	32.7	11	22.5	8	16.3	1	1.8	7	14.2	2	3.9	3	5.6	1	1.2
1980	31	100.0	6	19.3	6	21.0	3	9.7	1	2.1	7	21.4	3	10.9	1	5.2	NA	NA
1981	51	100.0	14	26.4	12	23.5	4	7.6	1	2.5	7	13.1	4	7.3	3	9.3	NA	NA
1982	46	100.0	15	31.7	8	18.0	3	6.2	1	1.4	8	17.5	6	12.1	1	4.7	NA	NA
1983	59	100.0	21	34.8	11	18.4	7	11.6	1	1.5	9	15.8	5	8.1	2	3.2	NA	NA
China																		
1977	39	100.0	4	8.9	14	35.6	3	8.4	15	38.4	(c)	.6	(c)	.2	3	6.6	(c)	(d)
1978	68	100.0	6	8.8	20	29.5	15	22.3	12	18.2	1	1.7	2	2.8	NA	NA	NA	NA
1979	112	100.0	NA	NA	34	30.7	30	27.0	24	21.1	4	4.0	3	2.4	NA	NA	NA	NA
1980	119	100.0	6	5.2	36	30.5	25	20.8	14	11.7	2	1.5	9	7.1	2	1.4	NA	NA
1981	74	100.0	1	2.0	13	17.2	24	32.4	20	26.7	1	1.6	2	3.1	2	2.6	NA	NA
1982	54	100.0	2	4.2	8	14.2	11	19.9	30	55.5	1	1.0	(c)	.6	1	1.7	NA	NA
1983	63	100.0	13	21.1	9	13.9	10	16.2	23	35.8	3	4.8	4	6.0	(c)	.5	NA	NA
Argentina																		
1977	30	100.0	3	10.8	9	31.1	1	1.7	5	15.3	7	21.7	2	5.2	3	9.0	(c)	1.5
1978	78	100.0	11	14.3	33	42.0	1	1.0	6	8.2	16	20.6	NA	NA	4	5.8	1	1.2
1979	64	100.0	9	13.4	24	37.6	NA	3.0	9	13.6	10	14.9	3	4.1	7	10.4	1	1.7
1980	61	100.0	11	17.9	14	22.7	2	3.7	6	9.8	19	31.0	4	7.2	3	4.4	NA	NA
1981	50	100.0	7	14.1	16	32.2	2	4.9	4	7.6	7	14.7	4	8.1	4	8.6	NA	NA
1982	27	100.0	7	26.4	8	29.2	1	4.9	4	13.5	3	10.6	1	2.4	3	10.0	NA	NA
1983	14	100.0	1	8.3	5	36.6	3	22.4	(c)	2.6	3	22.3	0	.0	(c)	1.7	NA	NA
Eastern Europe																		
U.S.S.R.																		
1977	649	100.0	31	4.8	320	49.2	80	12.4	80	12.4	43	6.6	9	1.3	21	3.2	15	2.3
1978	637	100.0	17	2.6	301	47.3	78	12.3	71	11.1	77	12.0	NA	NA	42	6.7	5	.8
1979	635	100.0	7	1.1	315	49.6	47	7.3	73	11.5	78	12.3	18	2.8	58	9.1	11	1.7
1980	648	100.0	19	2.9	349	53.8	66	10.1	73	11.3	33	5.1	19	2.9	62	9.5	NA	NA
1981	419	100.0	16	3.8	203	48.4	55	13.1	48	11.5	40	9.6	13	3.0	28	6.8	NA	NA
1982	439	100.0	1	.3	213	48.5	48	10.9	78	17.8	40	9.2	7	1.6	18	4.2	NA	NA
1983	542	100.0	7	1.4	267	49.1	80	14.8	66	12.1	49	9.1	14	2.7	14	2.6	NA	NA

Note: Footnotes on final page of table.

EXPORT MARKET SHARES OF MAJOR MACHINE TOOL PRODUCER COUNTRIES TO SELECTED LARGEST IMPORTER COUNTRIES (a)

(Values in Millions of Dollars and Percent of Total)
(Continued)

Importing Country and Date	Total Exports from 14 Major Producers (b)		Exporting Country: United States		West Germany		Japan		Switzerland		Italy		United Kingdom		France		Sweden	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Poland																		
1977	$203	100.0%	$ 8	4.0%	$54	26.8%	$41	20.1%	$25	12.4%	$21	10.1%	$21	10.4%	$12	5.7%	$6	3.1%
1978	264	100.0	25	9.4	81	30.8	26	9.9	27	10.4	22	8.4	52	19.7	10	3.6	7	2.6
1979	187	100.0	3	1.8	56	30.1	NA	NA	17	9.2	16	8.5	34	17.9	8	4.4	3	1.9
1980	91	100.0	2	1.8	31	34.3	6	6.2	17	18.2	9	9.7	11	11.7	11	11.8	NA	NA
1981	96	100.0	(c)	.0	47	49.4	19	20.2	14	14.7	6	6.7	3	3.4	3	2.6	NA	NA
1982	76	100.0	1	.8	62	81.9	0	.0	6	7.8	3	3.9	1	1.8	(c)	.3	NA	NA
1983	39	100.0	5	13.2	14	37.5	1	3.1	7	17.5	3	7.2	5	11.9	1	1.5	NA	NA
Rumania																		
1977	140	100.0	5	3.4	57	40.7	26	18.8	14	10.1	13	9.1	4	3.1	10	6.9	2	1.2
1978	267	100.0	21	8.0	73	27.1	50	18.8	17	6.3	37	13.7	7	2.5	56	20.9	2	.6
1979	243	100.0	7	2.7	58	24.1	23	9.4	17	7.1	52	21.5	6	2.3	72	29.7	2	1.0
1980	98	100.0	2	1.7	19	19.9	3	3.3	6	5.9	26	27.1	4	4.1	25	25.6	NA	NA
1981	46	100.0	1	3.0	16	35.5	6	13.9	4	8.0	12	25.6	4	7.6	1	2.3	NA	NA
1982	7	100.0	3	44.8	2	22.7	(c)	.9	1	12.3	(c)	2.5	1	15.5	0	.0	NA	NA
1983	18	100.0	(c)	.1	3	17.5	0	.0	1	5.3	8	43.7	(c)	.7	4	23.5	NA	NA
Yugoslavia																		
1977	[illegible]	100.0	2	1.8	57	65.7	NA	NA	11	13.0	8	9.6	3	3.5	3	3.4	1	1.5
1978	143	100.0	5	3.6	83	58.4	NA	NA	22	15.5	15	10.3	5	3.3	6	4.5	3	2.4
1979	186	100.0	5	2.7	98	52.5	8	4.2	22	11.9	24	12.9	2	1.2	14	7.5	1	.5
1980	119	100.0	2	1.6	59	49.3	(c)	.2	16	13.1	24	20.1	4	3.1	12	10.0	NA	NA
1981	77	100.0	3	4.1	40	51.9	4	5.7	13	16.6	9	11.5	2	2.8	3	3.8	NA	NA
1982	87	100.0	1	.7	46	52.5	1	1.1	13	15.2	10	11.5	1	1.2	11	12.8	NA	NA
1983	107	100.0	1	.7	68	63.9	2	1.8	18	16.4	8	7.4	1	.6	4	3.6	NA	NA
Czechoslovakia																		
1977	53	100.0	(c)	.9	34	63.5	2	3.0	8	15.2	3	5.4	1	2.7	1	1.3	(c)	.3
1978	75	100.0	(c)	.3	49	64.3	NA	NA	12	15.8	6	7.3	2	2.0	2	3.1	1	.8
1979	82	100.0	NA	NA	54	65.8	1	.6	17	20.8	3	4.0	1	1.2	1	1.7	3	3.2
1980	61	100.0	(c)	.1	33	54.6	1	1.3	10	16.0	8	13.6	2	3.1	4	6.3	NA	NA
1981	39	100.0	1	3.2	25	65.2	(c)	.9	6	15.6	1	3.0	2	4.8	1	2.4	NA	NA
1982	37	100.0	0	.0	17	46.8	2	6.5	10	27.8	1	3.1	1	2.0	2	5.1	NA	NA
1983	42	100.0	1	3.2	27	63.9	1	1.8	9	21.0	1	3.1	(c)	.3	(c)	.4	NA	NA

Note: Footnotes on final page of table.

EXPORT MARKET SHARES OF MAJOR MACHINE TOOL PRODUCER COUNTRIES TO SELECTED LARGEST IMPORTER COUNTRIES (a)

(Values in Millions of Dollars and Percent of Total)

(Continued)

Importing Country and Date	Total Exports from 14 Major Producers (b)		Exporting Country															
			United States		West Germany		Japan		Switzerland		Italy		United Kingdom		France		Sweden	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Hungary																		
1977	$50	100.0%	$2	3.4%	$32	63.6%	$3	7.0%	$5	10.4%	$1	2.0%	$1	1.7%	$1	1.9%	$1	1.6%
1978	48	100.0	(c)	.4	26	55.3	1	1.9	7	15.3	4	9.2	1	1.4	2	5.0	NA	NA
1979	62	100.0	1	1.8	44	70.9	NA	NA	6	9.1	3	4.3	NA	NA	2	3.1	1	1.5
1980	36	100.0	1	3.7	18	51.5	1	4.0	6	16.9	3	7.6	1	3.8	2	5.1	NA	NA
1981	28	100.0	1	3.3	15	54.4	1	5.1	6	23.5	1	2.1	(c)	.8	(c)	1.0	NA	NA
1982	17	100.0	1	7.5	9	50.2	(c)	.4	3	17.2	2	11.9	(c)	.0	(c)	2.2	NA	NA
1983	21	100.0	0	.0	9	43.1	6	26.8	4	17.6	1	3.4	(c)	.0	1	3.9	NA	NA

NA - Not Available.

(a) Re-exported items are included; therefore these figures are inconsistent with other Handbook data.
(b) Percent of Total is proportion of Total Exports from 14 Major Producers. The 14 countries are - United States, Austria, Belgium, Denmark, France, Federal Republic of Germany, Italy, Japan, Netherlands, Norway, Sweden, Switzerland and the United Kingdom.
(c) Less than $500,000.
(d) Less than .05%.

Source: U.S. Dept. of Commerce, "Market Share Reports," Commodity Series, Machine Tools for Working Metals.

MACHINE TOOL IMPORTS OF EEC COUNTRIES, 1984

(Thousands of U.S. Dollars)

Code 84.45	Item	Total EEC	West Germany	France	Italy	Benelux Countries (a)	United Kingdom
	METAL CUTTING						
01	For fissionable material, NC	$ 132	$ 0	$ 0	$ 3	$ 125	$ 0
03	For fissionable material, not NC	17	0	0	0	2	0
05	Electro erosion, electric, ultrasonic, NC	90,113	42,490	17,910	13,013	3,262	9,986
07	Electro erosion, electric, ultrasonic, not NC	20,883	6,353	3,304	6,949	2,660	926
12	Center and copying multiple tool lathes, NC	103,186	23,375	22,932	5,615	12,865	28,707
14	Automatic and turret lathers, NC	104,652	30,875	17,328	8,696	8,732	33,638
16	Automatic and revolving lathes, not parallel, multiple tool, NC	55,746	17,546	9,355	7,400	5,201	11,747
22	Center and copying lathes, multiple tool, not NC	36,620	14,107	6,692	2,041	4,561	6,298
24	Automatic and turret lathes, not NC	53,705	16,347	12,820	6,327	3,476	13,251
26	Automtic and turret lathes, not parallel, multiple tool, not NC	33,074	10,679	3,421	4,712	8,876	0
36	Boring-milling machines, horizontal, NC	59,997	22,920	13,648	3,786	5,518	9,394
37	Boring machines, not boring-milling, NC	13,235	3,175	2,888	2,506	1,724	2,587
38	Boring-milling, horizontal, not NC	9,701	2,130	2,130	584	1,034	3,269
39	Boring machines, not boring-milling, not NC	6,575	1,334	909	1,095	790	1,927
41	Planing machines, NC	116	0	3	0	113	0
43	Planing machines, not NC	1,233	146	179	25	223	416
44	Shaping & slotting, broaching, sawing, NC	9,585	2,354	1,643	1,077	1,442	2,548
45	Shaping & slotting, not NC	3,223	672	162	288	328	1,483
46	Broaching machines, not NC	5,906	703	2,871	803	235	1,183
47	Sawing and cut-off machines, not NC	53,523	10,338	10,015	7,579	7,393	12,272
48	Milling machines, NC	113,408	51,226	21,150	8,358	16,611	10,960
49	Radial drilling machines, NC	1,368	135	682	52	201	146
51	Piercing machines, not drilling, NC	34,724	15,968	6,224	2,403	3,868	5,297
52	Milling machines, not NC	76,103	22,938	11,640	10,876	15,816	10,379
53	Radial drilling machines, not NC	5,322	1,747	613	540	1,264	898
54	Other drilling machines	36,794	11,756	6,093	2,323	6,525	6,126
55	Cylindrical and surface grinding machines (micrometric), NC	47,804	12,959	9,061	12,920	730	10,568
56	Grinding, honing, polishing, lapping (micrometric), NC	15,586	6,456	1,980	976	3,098	2,186
57	Surface grinding machines, plane surface (micrometric), not NC	21,479	4,290	4,631	1,761	3,458	5,918
58	Surface grinding machines, cylindrical surface (micrometric), not NC	47,708	20,558	8,500	3,453	3,431	10,256
59	Other grinding machines, not plane or cylindrical surface, (micrometric), not NC	35,147	12,379	3,627	6,712	2,829	8,352
61	Grinding, honing, polishing, lapping, (micrometric), not NC	25,804	11,703	1,819	3,546	2,506	4,866
62	Grinding, honing, polishing, lapping (not micrometric), NC	7,923	3,976	1,905	405	785	250
63	Grinding, honing, polishing, lapping (not micrometric), not NC	50,768	12,456	15,561	8,605	8,403	3,054
64	Jig boring & milling machines, NC	128,984	33,514	9,905	783	75,703	3,203
65	Jig boring & milling machines, not NC	3,035	603	219	627	615	774
66	Gear cutting machines, cylindrical, NC	6,978	266	1,205	1,230	518	3,671
68	Gear cutting machines, cylindrical, not NC	7,658	1,413	831	605	233	4,539
69	Gear cutting machines, noncylindrical, NC	3,425	597	961	76	591	1,182
71	Gear cutting machines, noncylindrical, not NC	9,752	5,601	505	1,806	680	847
93	Screwing and tapping machines by cutting	11,195	1,698	1,328	1,030	2,394	3,782
94	Other metal cutting machines	97,684	4,767	25,772	5,498	4,845	56,169
	Total imports, cutting (EEC)	$1,449,871	$442,550	$262,422	$147,084	$223,664	$293,055

MACHINE TOOL IMPORTS OF EEC COUNTRIES, 1984

(Thousands of U.S. Dollars)
(Continued)

Code 84.45 Item	Total EEC	West Germany	France	Italy	Benelux Countries (a)	United Kingdom
METAL FORMING						
72 Hydraulic presses, NC, other than 8445.81, 82, 88	$ 14,177	$ 4,053	$ 404	$ 1,148	$ 1,942	$ 2,513
75 Presses, NC, other than 8445.81, 82, 88	12,934	2,808	2,926	2,759	1,190	2,204
77 Hydraulic presses, not NC, other than 8445.83, 87, 89	34,542	12,791	2,851	1,391	7,203	8,339
78 Nonhydraulic presses, not NC, making rivets, bolts, screws, other than 8445.83 87, 89	11,262	6,683	863	1,015	448	1,889
79 Nonhydraulic presses, not NC, not making rivets, bolts, screws, other than 8445.83 87, 89	44,557	9,595	15,427	4,818	5,717	7,587
81 Rolling, bending, folding and planing machines, NC	19,858	7,112	2,526	1,053	3,442	2,189
82 Shearing, punching and stamping, NC	62,871	13,308	14,379	7,272	8,480	13,688
83 Rolling, bending, folding and planing machines, not NC	24,761	8,541	2,401	1,121	4,672	5,644
84 Rolling, bending, folding and planing, not flat products, not NC	30,307	5,962	6,600	4,155	7,781	3,555
85 Hydraulic shearing machines, not NC	21,588	5,733	3,928	474	4,828	4,909
86 Nonhydraulic shearing machines, not NC	16,040	3,500	3,996	694	4,579	2,452
87 Punching and stamping machines, not NC	27,916	11,585	3,831	1,062	6,650	3,234
88 Forging and stamping, NC	3,110	24	460	220	1,150	1,237
89 Forging and stamping, not NC	9,331	754	3,815	689	1,786	2,023
92 Forming by drawing, bars, tubes, wire etc.	13,549	2,418	2,652	1,536	2,377	3,612
95 Screwing and tapping machines not by cutting	3,558	1,034	632	305	410	804
96 Other metal forming machines for working flat products	12,396	1,759	4,609	1,021	1,256	2,448
97 Other machines for working wire	25,508	8,022	7,212	2,256	2,612	4,025
Total imports, forming (EEC)	$388,265	$105,682	$ 79,512	$ 32,989	$ 66,523	$ 72,352
98 MACHINE TOOLS NEC	92,972	16,739	17,378	16,896	16,241	26,593
Grand Total	$1,931,108	$564,971	$359,312	$196,969	$306,428	$392,000

(a) Belgium, Luxembourg, Netherlands.

Source: Statistical Office of the European Communities.

MACHINE TOOL EXPORTS OF EEC COUNTRIES, 1984

(Thousands of U.S. Dollars)

Code 84.45 Item	Total EEC	West Germany	France	Italy	Benelux Countries (a)	United Kingdom
METAL CUTTING						
01 For fissionable material, NC	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
03 For fissionable material, not NC	81	76	0	0	1	4
05 Electro erosion, electric, ultrasonic, NC	24,189	16,364	2,246	914	257	3,433
07 Electro erosion, electric, ultrasonic, not NC	20,028	13,986	781	1,015	1,474	2,733
12 Center and copying multiple tool lathes, NC	82,833	62,137	4,539	6,730	5,669	3,656
14 Automatic and turret lathers, NC	142,645	120,268	7,122	5,147	5,469	4,621
16 Automatic and revolving lathes, not parallel, multiple tool, NC	69,070	34,259	340	26,659	1,764	5,832
22 Center and copying lathes, multiple tool, not NC	69,011	25,910	4,696	5,068	2,635	30,588
24 Automatic and turret lathes, not NC	95,733	45,473	8,256	18,022	1,013	22,896
26 Automtic and turret lathes, not parallel, multiple tool, not NC	49,438	22,532	10,205	13,886	2,151	0
36 Boring-milling machines, horizontal, NC	80,679	50,144	937	19,561	816	8,968
37 Boring machines, not boring-milling, NC	19,205	7,839	17	2,747	6,320	1,893
38 Boring-milling, horizontal, not NC	15,515	5,166	1,609	3,929	27	3,609
39 Boring machines, not boring-milling, not NC	20,110	7,682	558	7,902	40	2,017
41 Planing machines, NC	616	0	2	614	0	0
43 Planing machines, not NC	1,940	993	215	561	41	5
44 Shaping & slotting, broaching, sawing, NC	7,990	3,481	471	540	0	3,450
45 Shaping & slotting, not NC	6,142	2,307	537	1,401	57	1,670
46 Broaching machines, not NC	13,086	5,557	44	6,442	74	969
47 Sawing and cut-off machines, not NC	97,253	53,870	7,277	24,790	3,594	6,074
48 Milling machines, NC	196,646	132,509	11,969	33,968	891	16,532
49 Radial drilling machines, NC	1,485	314	180	792	77	107
51 Piercing machines, not drilling, NC	36,114	20,436	905	10,176	1,324	3,095
52 Milling machines, not NC	169,135	63,259	16,963	58,800	6,352	22,638
53 Radial drilling machines, not NC	5,334	1,340	570	1,999	192	1,059
54 Other drilling machines	48,031	13,740	6,091	15,063	3,278	7,929
55 Cylindrical and surface grinding machines (micrometric), NC	57,445	39,097	1,376	7,750	829	8,225
56 Grinding, honing, polishing, lapping (micrometric), NC	26,048	23,261	622	1,504	397	147
57 Surface grinding machines, plane surface (micrometric), not NC	79,624	52,018	591	12,766	581	9,992
58 Surface grinding machines, cylindrical surface (micrometric), not NC	65,491	39,073	2,058	3,729	1,152	13,633
59 Other grinding machines, not plane or cylindrical surface, (micrometric), not NC	89,570	32,018	7,176	34,344	7,008	8,785
61 Grinding, honing, polishing, lapping, (micrometric), not NC	93,330	78,379	1,566	5,527	778	6,995
62 Grinding, honing, polishing, lapping (not micrometric), NC	8,568	4,251	2,676	1,151	125	0
63 Grinding, honing, polishing, lapping (not micrometric), not NC	76,405	32,805	10,830	21,007	5,809	1,075
64 Jig boring & milling machines, NC	83,748	15,215	69	20,016	46,619	860
65 Jig boring & milling machines, not NC	3,422	1,780	163	739	61	660
66 Gear cutting machines, cylindrical, NC	17,233	16,683	179	66	82	223
68 Gear cutting machines, cylindrical, not NC	16,646	13,863	85	469	30	2,158
69 Gear cutting machines, noncylindrical, NC	3,400	2,994	326	80	0	0
71 Gear cutting machines, noncylindrical, not NC	18,054	11,246	657	1,604	3,795	719
93 Screwing and tapping machines by cutting	19,798	8,805	1,194	1,546	2,010	1,668
94 Other metal cutting machines	231,831	158,426	9,875	33,058	198	30,229
Total Imports, cutting (EEC)	$2,162,922	$1,239,556	$126,073	$412,182	$113,010	$239,147

MACHINE TOOL EXPORTS OF EEC COUNTRIES, 1984

(Thousands of U.S. Dollars)
(Continued)

Code 84.45 Item	Total EEC	West Germany	France	Italy	Benelux Countries (a)	United Kingdom
METAL FORMING						
72 Hydraulic presses, NC, other than 8445.81, 82, 88	$ 11,795	$ 4,965	$ 660	$ 3,347	$ 998	$ 1,563
75 Presses, NC, other than 8445.81, 82, 88	13,132	2,415	146	3,524	5,331	1,655
77 Hydraulic presses, not NC, other than 8445.83, 87, 89	112,605	55,502	2,839	17,301	18,457	14,287
78 Nonhydraulic presses, not NC, making rivets, bolts, screws, other than 8445.83 87, 89	29,589	21,378	78	4,938	2,727	449
79 Nonhydraulic presses, not NC, not making rivets, bolts, screws, other than 8445.83 87, 89	116,041	54,129	10,170	33,093	8,786	9,207
81 Rolling, bending, folding and planing machines, NC	26,757	10,705	2,750	4,212	2,639	3,458
82 Shearing, punching and stamping, NC	76,868	62,449	1,276	4,313	2,668	5,553
83 Rolling, bending, folding and planing machines, not NC	76,150	49,560	3,724	8,281	8,708	3,852
84 Rolling, bending, folding and planing, not flat products, not NC	64,152	20,971	12,873	16,795	6,094	5,733
85 Hydraulic shearing machines, not NC	41,677	17,395	6,959	1,674	12,255	1,227
86 Nonhydraulic shearing machines, not NC	55,375	29,284	3,183	17,265	1,252	3,585
87 Punching and stamping machines, not NC	29,369	16,595	2,038	2,470	6,096	1,281
88 Forging and stamping, NC	16,320	15,243	216	179	109	570
89 Forging and stamping, not NC	46,555	30,295	922	10,129	524	4,641
92 Forming by drawing, bars, tubes, wire etc	62,428	42,365	1,129	14,626	301	3,947
95 Screwing and tapping machines not by cutting	8,524	5,622	647	1,321	421	498
96 Other metal forming machines for working flat products	31,037	19,413	3,310	5,866	595	1,442
97 Other machines for working wire	60,511	44,055	2,969	6,654	4,347	2,431
Total imports, forming (EEC)	$ 878,885	$ 502,341	$ 55,889	$155,988	$ 82,308	$ 65,379
98 MACHINE TOOLS NEC	260,059	41,931	27,667	141,174	9,264	38,053
Grand Total	$3,301,866	$1.783.828	$209.629	$709,344	$204,582	$342,579

(a) Belgium, Luxembourg, Netherlands.

Source: Statistical Office of the European Communities.

MACHINE TOOL IMPORTS OF EEC COUNTRIES, 1984

Selected Countries

(Thousands of U.S. Dollars)

Countries	Total EEC	France	Netherlands	West Germany	Italy
EUROPE	$1,396,203	$241,610	$ 96,745	$346,283	$157,320
France	62,386	—	2,737	22,774	8,586
Belgium	42,250	6,898	4,993	13,566	5,111
Netherlands	29,232	3,003	—	12,218	2,080
West Germany	518,653	99,105	53,333	—	75,621
Italy	184,656	54,165	6,913	48,661	—
United Kingdom	64,303	10,758	4,469	21,195	7,598
Denmark	13,451	943	791	3,453	258
Sweden	40,897	2,812	2,547	17,404	3,844
Switzerland	294,943	46,273	13,094	150,292	34,535
Austria	32,829	1,274	1,381	21,829	2,399
Portugal	980	106	94	160	14
Spain	41,215	8,286	2,677	14,678	3,171
Other Europe	14,183	1,152	319	4,296	1,246
Ireland	4,539	543	63	1,090	0
Norway	1,823	43	80	183	95
Finland	3,829	427	137	520	509
Yugoslavia	3,394	137	0	2,145	579
Eastern Europe	56,226	6,834	3,394	15,756	12,857
U.S.S.R.	9,489	1,052	390	2,657	2,682
East Germany	12,121	3,088	427	(a)	3,997
Czechoslovakia	16,401	914	1,848	6,028	2,002
Hungary	5,239	84	86	3,532	300
AFRICA	400	0	37	40	219
South Africa	277	0	22	26	127
AMERICA	126,329	14,523	4,573	33,257	14,309
United States	117,243	14,250	4,244	27,331	13,550
Canada	2,486	113	200	423	52
Mexico	127	0	127	0	0
Colombia	0	0	0	0	0
Venezuela	25	0	0	0	25
Brazil	5,705	157	0	5,504	8
Argentina	664	0	0	0	664
ASIA	279,989	41,836	10,698	87,132	9,741
Israel	845	0	1	555	60
Other Near East	481	1	0	6	79
India	974	47	0	330	1
Singapore	2,315	0	895	825	14
South Korea	2,844	43	310	1,387	0
Japan	245,666	35,960	8,337	76,230	8,790
Taiwan	23,893	5,182	1,050	6,168	588
AUSTRALIA & OCEANIA	392	0	0	15	0
Australia	99	0	0	0	0
TOTAL	$1,803,313	$297,969	$112,053	$466,727	$181,589

MACHINE TOOL IMPORTS OF EEC COUNTRIES, 1984

Selected Countries

(Thousands of U.S. Dollars)

Countries	United Kingdom	Sweden	Switzerland	Austria	Spain
EUROPE	$216,456	$ 96,828	$110,748	$82,020	$48,194
France	11,670	1,961	9,011	1,123	4,525
Belgium	8,548	1,268	571	761	533
Netherlands	6,316	1,621	2,031	852	1,111
West Germany	103,013	47,338	70,077	51,277	18,890
Italy	27,841	13,031	16,193	9,118	8,734
United Kingdom	—	6,069	3,175	1,248	3,686
Denmark	2,583	3,773	1,000	426	223
Sweden	9,534	—	1,141	1,443	2,171
Switzerland	25,074	9,633	—	10,047	5,994
Austria	1,982	1,864	1,879	—	220
Portugal	307	0	63	68	166
Spain	6,141	3,470	1,703	1,088	—
Other Europe	3,139	2,407	797	751	76
Ireland	2,445	38	263	94	3
Norway	296	582	386	169	0
Finland	267	1,727	131	38	74
Yugoslavia	33	60	8	434	0
Eastern Europe	4,202	4,393	3,108	3,818	1,864
U.S.S.R.	1,006	471	387	800	43
East Germany	1,167	1,141	407	1,052	841
Czechoslovakia	1,178	2,332	502	973	623
Hungary	198	4	355	681	0
AFRICA	103	0	0	0	0
South Africa	103	0	0	0	0
AMERICA	47,363	5,070	1,959	1,236	4,039
United States	45,905	4,868	1,912	1,204	3,979
Canada	1,393	189	47	10	60
Mexico	0	0	0	0	0
Colombia	0	0	0	0	0
Venezuela	0	0	0	0	0
Brazil	0	13	0	23	0
Argentina	0	0	0	0	0
ASIA	77,070	25,502	17,703	7,073	3,233
Israel	169	0	56	1	2
Other Near East	283	0	0	112	0
India	385	5	185	20	0
Singapore	486	16	44	35	0
South Korea	1,084	13	0	7	0
Japan	67,429	23,224	16,477	6,035	3,183
Taiwan	7,043	2,054	920	844	43
AUSTRALIA & OCEANIA	377	0	0	0	0
Australia	99	0	0	0	0
TOTAL	$341,369	$127,400	$146,887	$90,329	$55,466

Note: Individual items may not add to totals due to rounding.

Source: Statistical Office of the European Communities.

MACHINE TOOL EXPORTS OF EEC COUNTRIES, 1984

Selected Countries

(Thousands of U.S. Dollars)

Countries	Total EEC	France	Netherlands	West Germany	Italy
EUROPE	$2,413,151	$110,219	$41,833	$1,144,334	$333,595
France	240,836	—	3,028	111,037	54,010
Belgium	81,965	6,593	5,836	43,091	9,657
Netherlands	101,574	3,003	—	62,298	6,825
West Germany	320,192	21,111	11,961	—	59,856
Italy	153,446	9,405	2,004	84,453	—
United Kingdom	206,232	10,944	6,152	119,361	26,031
Denmark	43,328	1,107	766	20,034	4,124
Sweden	93,793	2,492	1,977	56,888	9,765
Switzerland	124,366	8,776	2,745	77,582	22,428
Austria	85,636	1,375	899	59,168	8,902
Portugal	20,789	5,080	62	6,907	3,128
Spain	49,970	5,048	1,040	22,534	8,279
Other Europe	255,263	11,369	3,457	127,149	50,251
Norway	30,854	778	296	12,687	1,631
Finland	41,235	837	619	20,376	4,670
Yugoslavia	94,080	8,330	1,138	61,234	7,272
Turkey	60,180	671	675	23,613	28,021
Eastern Europe	635,761	23,917	1,906	348,832	70,340
U.S.S.R.	457,588	11,635	398	273,079	45,255
Poland	35,411	3,241	28	12,660	7,983
Czechoslovakia	47,347	1,340	844	24,713	6,480
Bulgaria	58,609	1,904	174	26,803	4,993
AFRICA	220,555	35,942	1,116	81,072	57,139
South Africa	70,325	2,071	557	29,529	17,472
AMERICA	692,288	69,441	7,035	257,383	88,756
United States	500,560	23,425	5,350	201,763	57,841
Canada	62,659	7,531	1,069	19,284	7,741
Mexico	63,339	35,543	0	14,202	4,785
Colombia	4,926	95	0	578	967
Venezuela	15,597	43	287	3,949	6,224
Brazil	13,366	235	114	7,841	2,154
Argentina	14,424	1,160	0	5,836	4,824
ASIA	621,246	31,945	5,670	285,459	72,389
Iraq	22,331	271	10	11,059	896
Iran	92,001	51	982	71,313	6,797
India	88,811	3,395	714	43,090	3,837
China	51,988	2,225	312	21,581	10,003
Japan	102,990	1,364	801	36,694	6,625
Taiwan	22,921	1,745	29	8,673	2,629
AUSTRALIA & OCEANIA	40,460	2,544	919	11,350	6,242
Australia	32,774	1,895	621	10,869	5,403
TOTAL	$3,987,700	$250,091	$56,573	$1,779,598	$558,121

MACHINE TOOL EXPORTS OF EEC COUNTRIES, 1984

Selected Countries

(Thousands of U.S. Dollars)

Countries	United Kingdom	Sweden	Switzerland	Austria	Spain
EUROPE	$124,999	$ 83,586	$411,188	$111,199	$ 52,197
France	15,227	1,876	46,280	1,238	8,139
Belgium	6,248	1,002	7,519	217	1,801
Netherlands	5,129	2,954	12,676	1,188	2,503
West Germany	27,554	18,088	145,132	20,894	11,341
Italy	8,273	6,444	37,681	2,806	2,380
United Kingdom	—	8,992	25,968	2,205	6,580
Denmark	2,699	7,670	5,758	94	1,076
Sweden	8,368	—	9,549	1,658	3,097
Switzerland	6,974	1,693	—	2,613	1,556
Austria	2,134	1,308	10,801	—	989
Portugal	935	39	1,328	94	3,216
Spain	4,530	1,517	6,791	232	—
Other Europe	17,869	15,911	21,989	2,306	4,963
Norway	5,618	6,810	1,995	158	881
Finland	2,699	7,208	2,938	435	1,453
Yugoslavia	941	307	13,305	865	688
Turkey	2,111	1,076	2,248	703	1,061
Eastern Europe	18,992	16,094	79,717	75,654	301
U.S.S.R.	14,279	11,624	34,580	66,738	0
Poland	1,383	1,078	7,003	1,933	102
Czechoslovakia	183	86	12,036	1,616	49
Bulgaria	2,041	991	19,085	2,467	151
AFRICA	23,753	2,163	9,441	1,303	8,627
South Africa	13,018	722	3,419	463	3,074
AMERICA	93,227	25,555	107,433	8,027	35,430
United States	81,168	20,724	93,240	1,178	15,870
Canada	9,741	3,732	5,424	5,047	3,091
Mexico	684	239	3,666	123	4,097
Colombia	506	123	469	297	1,892
Venezuela	106	152	791	152	3,892
Brazil	390	125	2,028	7	554
Argentina	69	88	796	371	1,282
ASIA	51,818	12,291	138,905	10,082	12,689
Iraq	5,385	3	3,840	354	514
Iran	3,646	753	7,080	870	509
India	10,890	2,654	13,970	463	2,797
China	1,479	1,364	14,568	400	55
Japan	2,768	1,318	52,902	512	7
Taiwan	1,587	164	7,918	34	145
AUSTRALIA & OCEANIA	7,544	958	4,986	1,111	3,528
Australia	4,613	777	4,575	1,032	2,988
TOTAL	$301,341	$124,553	$671,953	$131,722	$112,471

Note: Individual items may not add to totals due to rounding.

Source: Statistical Office of the European Communities.

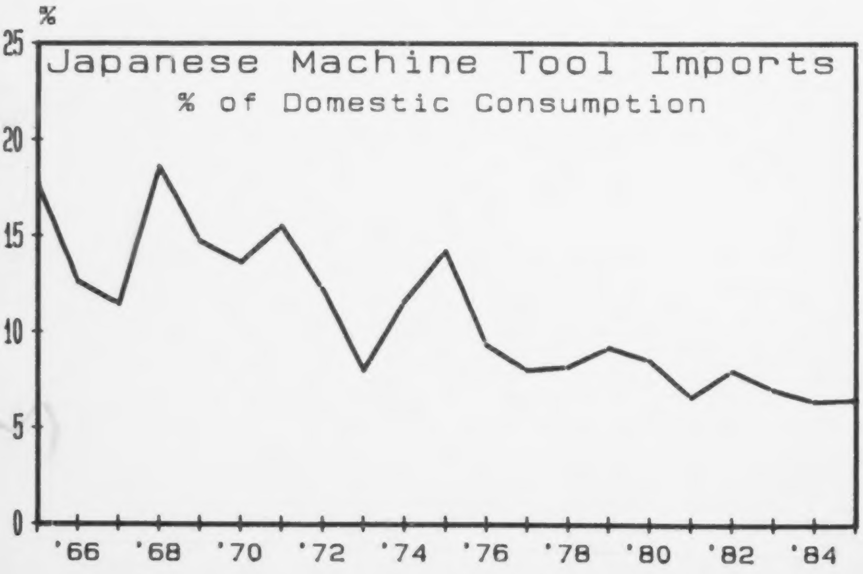
MACHINE TOOL IMPORTS AS A PERCENT OF DOMESTIC MACHINE TOOL CONSUMPTION, 1966 TO DATE

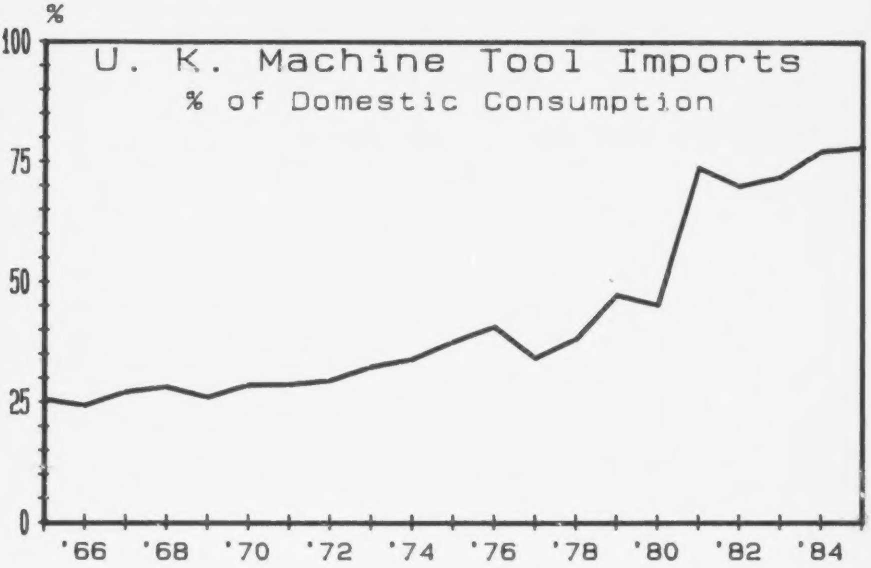
(Percent)

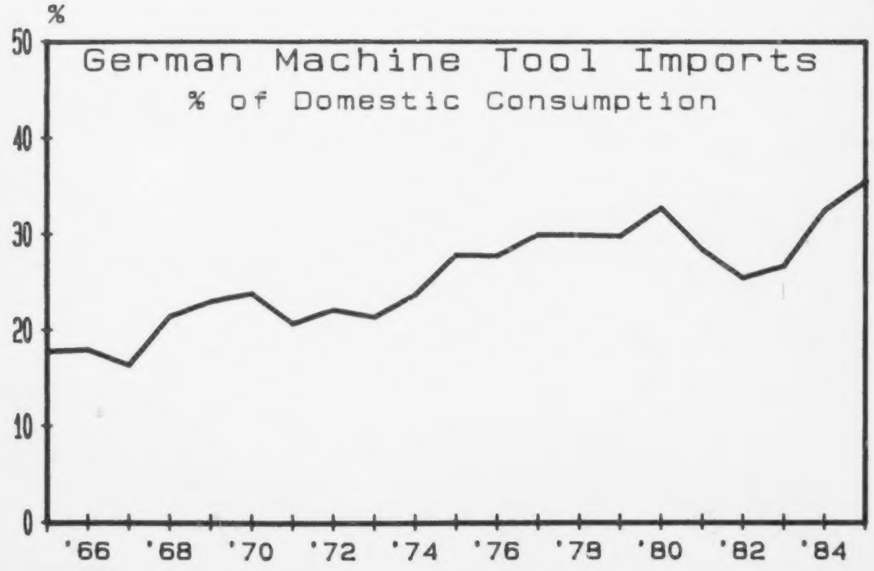
Year	U.S.A.	Japan	United Kingdom	West Germany
1966	7.4%	12.6%	24.3%	18.0%
1967	10.0	11.4	27.2	16.3
1968	9.8	18.6	28.3	21.4
1969	9.7	14.7	26.0	22.9
1970	9.5	13.6	28.7	23.8
1971	10.1	15.5	28.8	20.6
1972	10.0	12.2	29.6	22.1
1973	10.3	8.0	32.5	21.3
1974	13.4	11.6	34.1	23.7
1975	14.5	14.2	37.7	27.8
1976	16.1	9.3	40.8	27.7
1977	16.5	8.0	34.2	30.0
1978	21.5	8.2	38.3	29.9
1979	23.3	9.2	47.4	29.8
1980	23.6	8.5	45.3	32.8
1981	25.6	6.6	73.9	28.4
1982	27.4	8.0	70.0	25.4
1983	35.3	7.0	72.0	26.7
1984(r)	38.1	6.4	77.4	32.5
1985	40.9	6.5	78.2	35.5

r - Revised.

Source: National Machine Tool Builders' Association and respective machine tool trade associations.




%
U. K. Machine Tool Imports
% of Domestic Consumption
100
75
50
25
0
'66
'68
'70
'72
'74
'76
'78
'80
'82
'84


%
German Machine Tool Imports
% of Domestic Consumption
50
40
30
20
10
0
'66
'68
'70
'72
'74
'76
'78
'80
'82
'84

THE GERMAN MACHINE TOOL INDUSTRY (a)
1967 to Date

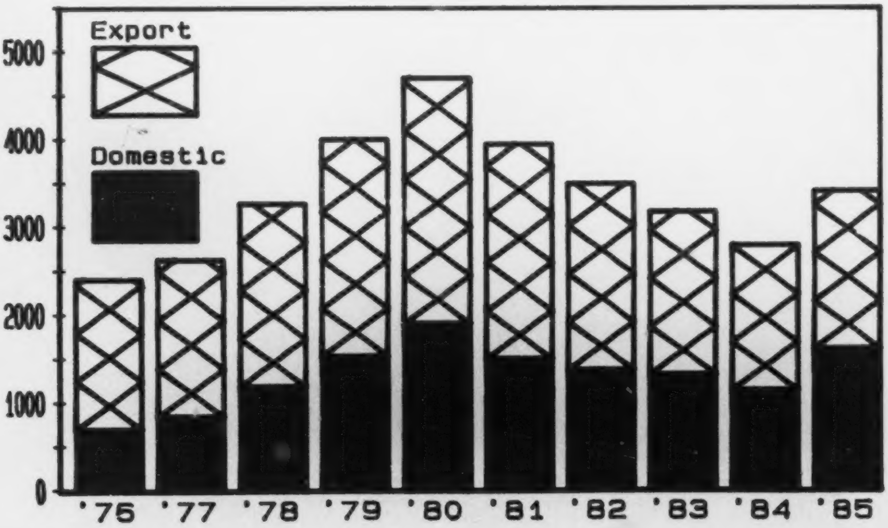
Year	Employees (Year-End)	Per Cent of Production Exported	Imports as Per Cent of Exports	Production Per Employee
		Per Cent of Value		U.S. $
1967	108,000	62.9%	11.5%	$ 7,943
1968	110,000	68.3	12.6	8,069
1969	120,000	59.1	20.6	9,869
1971	122,500	49.3	26.7	15,056
1972	117,600	55.7	21.2	15,275
1973	115,500	61.3	15.8	18,815
1974	115,800	69.0	12.8	22,541
1975	109,300	72.7	13.0	25,171
1976	101,400	70.2	9.5	27,283
1977	95,900	69.7	18.7	31,857
1978	94,800	65.0	22.9	40,326
1979	95,000	61.9	26.1	49,378
1980	98,000	62.6	29.2	55,497
1981	97,000	65.6	26.0	46,858
1982(r)	93,000	64.2	24.1	43,377
1983(r)	83,700	62.0	25.7	43,989
1984(r)	83,000	64.1	28.2	39,825
1985	88,000	62.4	33.9	42,185

r - Revised.

(a) Figures include parts.

Sources: VDMA, "Statistisches Handbuch fur den Maschinenbau", annually, "Die Lage des Maschinenbaues im Jahre" annually, and official foreign trade statistics.

West Germany
Machine Tool Production
Millions of Dollars



GERMAN PRODUCTION OF MACHINE TOOLS

1982 to Date

(Values in Thousands of U.S. Dollars)

Machine Classifications	1982		1983		1984		1985	
	Units	Value	Units	Value	Units	Value	Units	Value
GRAND TOTAL	184,967	$4,034,050	156,562	$3,681,878	157,054	$3,305,498	165,750	$3,712,242
Metal Cutting Total	89,461	$2,763,248	89,810	$2,557,399	88,475	$2,295,207	98,286	$2,594,486
Planing, Shaping and Broaching	658	42,134	518	27,430	370	15,940	397	21,444
Lathes	7,263	292,209	6,325	289,814	6,477	234,255	6,367	239,838
Turret Lathes, Automatic	2,855	307,676	2,487	288,548	2,652	239,810	2,786	285,446
Boring and Drilling	13,707	111,526	13,297	98,993	12,877	77,426	13,380	89,403
Milling Machines, Horizontal Boring and Milling Machines	6,831	410,129	7,763	376,006	8,341	361,992	8,080	407,821
Saws and Filing Machines	14,761	87,414	18,375	71,478	12,434	63,089	14,284	72,681
Grinding, Honing and Polishing	29,926	447,968	27,931	375,684	30,425	321,534	35,602	408,238
Gear Cutting Machines	1,043	121,130	785	97,280	690	83,571	923	106,252
Other Metal Cutting Machine Tools	12,417	605,704	12,329	626,397	14,207	573,545	16,467	607,156
Parts and Accessories	—	337,358	—	305,769	—	324,043	—	356,208
Metal Forming Total	95,506	1,270,802	66,752	1,124,479	68,579	1,010,291	67,464	1,117,755
Hammers, Forging and Riveting Machines, Bending and Straightening Machines	5,425	134,807	3,909	130,647	3,436	96,829	3,564	108,409
Mechanical Presses	9,437	193,607	10,256	157,383	12,077	106,774	11,307	159,361
Hydraulic Presses	2,113	230,467	2,279	215,142	5,517	171,955	1,979	149,927
Sheet Metalworking Machines, Including Shears	71,671	288,854	42,868	248,599	40,699	259,818	42,498	305,475
Wire Working Machines	6,409	198,912	7020	157,783	6,411	147,602	7,720	174,372
Bolt, Screw and Nut Making Machines	451	30,313	420	32,278	439	49,591	396	32,591
Parts and Accessories	—	191,842	—	182,646	—	177,721	—	187,620

Notes: German Federal Republic includes West Berlin. Totals include some unclassified items.

Exchange Rate: 1982 $1 = 2.4266 Deutsche Mark, 1983 $1 = 2.5533 Deutsche Mark; 1984 $1 = 2.8459 Deutsche Mark; 1985 $1 = 2.9440 Deutsche Mark.

Note: Individual items may not add to totals due to rounding.

Source: Fachgemeinschaft Werkzeugmaschinen, from official foreign trade statistics.

Detailed statistics supplied by individual countries may differ in value figures from those given in the International Statistics on Machine Tools. Problems in the conversion of national currencies into dollars and differing reporting practices probably account for most of the discrepancies.

GERMAN EXPORTS OF MACHINE TOOLS

1983 to Date

(Thousands of U.S. Dollars)

Machine Classifications	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
GRAND TOTAL	155,030	$2,282,825	184,065	$2,125,073	189,934	$2,315,393
Metal Cutting Total	127,622	$1,473,782	154,490	$1,365,421	159,505	$1,416,448
Planing, Shaping and Broaching	272	19,208	391	11,435	288	8,812
Lathes	2,552	194,120	3,050	158,328	3,175	144,116
Turret Lathes, Automatic	2,200	164,598	2,511	148,959	2,621	164,917
Drilling	5,986	94,404	6,926	69,660	12,206	68,006
Milling Machines, Horizontal Boring and Milling Machines	5,842	245,416	6,934	269,864	6,262	249,830
Saws and Filing Machines	8,382	48,024	9,605	51,650	9,862	57,065
Grinding, Honing and Polishing	98,036	281,654	119,957	267,763	119,573	299,407
Gear Cutting Machines	514	49,311	590	42,081	545	44,565
Other Metal Cutting Machine Tools 3,838	211,281	4,526	175,183	4,973	196,599	
Parts and Accessories	—	165,766	—	170,499	—	183,132
Metal Forming Total	24,575	698,258	26,376	605,219	27,927	735,132
Hammers, Forging and Riveting Machines, Bending and Straightening Machines	3,333	73,352	3,074	46,217	3,129	76,539
Mechanical Presses	3,278	62,297	2,970	56,485	4,067	56,263
Hydraulic Presses	2,088	76,362	1,559	53,750	1,828	57,732
Sheet Metalworking Machines, Including Shears	7,299	145,923	8,039	137,905	8,493	187,703
Wire Working Machines	4,165	116,945	5,012	103,721	5,318	124,056
Bolt, Screw and Nut Making Machines	497	25,130	550	27,844	551	29,302
Other Metal Forming Machine Tools	3,915	62,451	5,172	43,642	4,541	41,723
Parts and Accessories	—	135,798	—	135,654	—	161,814
Other Metal Working Machines (including Parts and Accessories)	2,833	110,785	3,199	154,433	2,502	163,813

Exchange rate: 1983 $1 = 2.5533 Deutsche Mark; 1984 $1 = 2.8459 Deutsche Mark; 1985 $ 1 = 2.9440 Deutsche Mark.

Note: Individual items may not add to totals due to rounding.

Source: Verein Deutscher Maschinenbau-Anstalten (VDMA) and VDW-Fachgemeinschaft Werkzeugmaschinen.

GERMAN IMPORTS OF MACHINE TOOLS
1983 to Date
(Thousands of U.S. Dollars)

Machine Classifications	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
GRAND TOTAL	64,020	$586,445	70,248	$598,903	83,345	$785,007
Metal Cutting Total	46,445	$371,864	50,915	$375,114	64,891	$516,495
Planing, Shaping and Broaching	103	2,840	153	1,137	126	1,513
Lathes	5,369	45,936	5,888	45,711	7,245	65,380
Turret Lathes, Automatic	587	25,818	1,056	31,188	1,336	46,987
Drilling	5,272	45,711	6,266	51,640	6,926	67,893
Milling Machines, Horizontal Boring and Milling Machines	3,837	79,579	4,097	64,763	4,640	98,721
Saws and Filing Machines	4,820	7,670	6,989	9,438	6,716	12,630
Grinding, Honing and Polishing	22,799	62,318	23,127	61,241	35,282	84,356
Gear Cutting Machines	57	7,956	61	7,650	81	7,838
Other Metal Cutting Machine Tools	3,601	35,384	3,278	39,288	2,539	55,032
Parts and Accessories	—	58,652	—	63,057	—	76,145
Metal Forming Total	13,934	178,749	15,187	179,619	16,079	218,872
Hammers, Forging and Riveting Machines, Bending and Straightening Machines	1,778	11,708	2,101	11,206	1,944	7,687
Mechanical Presses	2,020	10,745	1,315	9,986	1,455	12,342
Hydraulic Presses	1,139	9,123	1,482	13,994	1,452	15,295
Sheet Metalworking Machines, Including Shears	3,963	40,055	4,348	40,666	4,652	49,603
Wire Working Machines	1,784	26,376	2,396	27,396	2,840	35,050
Bolt, Screw and Nut Making Machines	185	7,923	296	8,775	309	9,145
Other Metal Forming Machine Tools	3,065	13,591	3,249	14,725	3,427	16,656
Parts and Accessories	—	59,228	—	52,871	—	73,095
Other Metal Working Machines (including Parts and Accessories)	3,641	35,832	4,146	44,170	2,375	49,640

E - Estimate.

Exchange rate: 1983 $1 = 2.5533 Deutsche Mark; 1984 $1 = 2.8459 Deutsche Mark; 1985 $1 = 2.9440 Deutsche Mark.

Note: Individual items may not add to totals due to rounding.

Source: Verein Deutscher Maschinenbau-Anstalten (VDMA) and VDW-Fachgemeinschaft Werkzeugmaschinen.

GERMAN EXPORTS OF METAL CUTTING MACHINE TOOLS

By Type of Machine & By Destination, 1985

(Thousands of U.S. Dollars)

Destination	Total (a)	Drilling Machines	Gear Cutting	Grinding, Honing, Polishing	Turret Lathes, Automatic	All Other Lathes	Boring & Milling Machines	Saw & Filing Machines	Planing, Slotting & Broaching	Other Metal Cutting
TOTAL	$1,233,317	$68,006	$44,565	$299,407	$164,917	$144,116	$249,830	$57,065	$8,812	$196,599
EUROPE	737,601	49,668	23,820	151,720	121,329	84,274	168,127	39,015	6,925	128,723
France	81,457	4,652	1,930	15,485	7,854	6,075	12,891	5,778	3,430	13,362
Belgium-Luxembourg	37,028	2,806	767	7,905	2,847	6,910	8,272	2,103	140	5,278
Netherlands	40,343	2,551	408	5,629	4,280	6,899	12,282	3,403	139	4,752
Italy	49,762	1,136	1,967	12,200	8,417	5,301	10,072	3,604	185	6,880
United Kingdom	91,343	4,620	2,169	15,173	20,824	7,837	20,711	6,390	99	13,520
Denmark	19,483	2,380	4	2,120	5,193	2,768	3,602	1,674	33	1,709
Norway	9,649	616	—	896	1,049	1,900	1,734	1,264	1	2,189
Sweden	56,107	4,353	4,165	10,281	8,177	2,940	11,715	2,612	612	11,252
Switzerland	68,846	8,611	1,320	12,751	9,196	6,262	19,577	3,483	90	7,556
Austria	50,907	3,380	646	8,457	5,468	7,860	13,536	2,730	182	8,648
Portugal	4,265	125	13	1,777	528	345	959	155	—	363
Spain	11,648	910	11	2,331	3,931	668	1,823	692	14	1,268
Yugoslavia	24,385	533	929	4,796	6,841	2,278	5,784	236	480	2,508
U.S.S.R.	132,778	4,873	3,138	27,569	19,439	15,080	22,911	475	33	39,260
Poland	14,895	1,631	—	3,791	2,880	1,779	4,150	444	16	204
Czechoslovakia	19,393	1,403	2,986	4,876	178	1,069	3,536	1,828	—	3,517
Hungary	4,861	104	283	1,350	628	164	930	29	3	1,370
Romania	742	—	—	—	—	742	—	—	—	—
Bulgaria	26,596	3,404	1,849	7,890	1,541	1,774	7,276	360	591	1,911
AFRICA	36,909	3,105	1,272	5,838	2,524	11,758	6,377	1,533	344	4,158
South Africa	13,984	2,028	653	2,386	1,072	2,635	3,949	569	160	532
AMERICA	237,095	8,345	10,228	81,191	26,537	27,525	40,001	9,231	824	33,213
United States	183,634	6,243	9,630	68,281	20,133	18,807	29,423	5,192	94	25,831
Canada	20,539	885	61	5,571	912	5,015	3,785	3,043	2	1,265
Mexico	15,805	813	332	1,225	5,088	1,185	3,423	641	656	2,442
Venezuela	2,835	—	—	1,324	24	213	303	125	—	846
Brazil	7,017	23	176	2,818	65	502	1,285	54	30	2,064
Chile	541	15	—	123	3	212	150	28	8	2
Argentina	4,336	231	29	1,455	250	1,342	814	130	4	81
ASIA	164,399	6,784	8,908	58,646	7,826	19,410	32,793	6,240	554	23,238
Iraq	3,944	306	—	690	335	1,937	396	40	47	193
Israel	6,829	606	418	176	1,336	160	2,922	747	78	386
Other Near East	28,922	1,003	1,454	4,154	4,703	2,180	4,438	1,149	331	9,510
India	22,548	1,524	2,033	5,825	2,769	4,243	4,725	611	8	810
Indonesia	5,013	323	—	1,203	1	1,779	1,167	202	—	338
Singapore	3,714	273	—	1,463	366	611	885	82	—	34
China	36,852	2,066	2,459	14,165	600	2,492	7,887	1,041	6	6,136
Japan	28,647	22	1,998	19,718	939	2,044	1,657	1,570	—	699
Taiwan	3,639	22	255	1,979	154	33	1,067	28	—	101
AUSTRALIA & OCEANIA	14,936	103	337	2,011	327	1,148	2,532	1,046	165	7,267
Australia	13,935	100	318	1,674	298	1,148	2,390	883	—	7,124

Exchange Rate: $1 = 2.9440 Deutsche Mark.

(a) Excludes parts.

Source: VDW-Fachgemeinschaft Werkzeugmaschinen and VDMA.

GERMAN EXPORTS OF METAL FORMING MACHINE TOOLS

By Type of Machine & By Destination, 1985

(Thousands of U.S. Dollars)

Destination	Total (a)	Hammers, Forging & Riveting, Bending & Forming	Mechanical Presses	Hydraulic Presses	Sheet Metal – working, Including Shears	Wire Working Machines	Bolt, Screw & Nut Working	Other Metal Forming Machines
TOTAL	$573,318	$76,539	$56,263	$57,732	$187,703	$124,056	$29,302	$41,723
EUROPE	319,665	46,128	26,622	36,358	106,114	60,904	17,602	25,937
France	32,563	2,086	4,007	857	13,594	7,961	2,111	1,947
Belgium-Luxembourg	14,784	555	1,615	484	7,824	2,946	65	1,295
Netherlands	22,094	1,893	3,700	2,080	10,381	2,767	184	1,089
Italy	23,658	2,844	852	847	7,917	4,947	2,664	3,487
United Kingdom	31,571	3,181	2,046	1,643	12,793	8,111	1,795	2,002
Denmark	7,531	457	1,511	797	3,036	904	94	732
Norway	5,308	368	382	83	3,046	1,128	59	242
Sweden	13,007	1,919	688	83	4,318	4,002	717	1,280
Switzerland	24,481	4,117	1,908	2,215	10,022	3,089	1,127	2,003
Austria	20,325	2,041	1,307	2,877	5,919	4,313	617	3,251
Portugal	1,594	623	167	3	57	492	—	252
Spain	8,327	2,493	591	222	788	2,585	446	1,202
Yugoslavia	15,599	3,078	1,639	3,619	1,663	1,580	1,820	2,200
U.S.S.R.	38,055	10,662	2,832	7,175	7,186	3,585	3,898	2,717
Poland	4,139	491	963	120	447	1,780	13	325
Czechoslovakia	8,631	1,662	373	490	3,727	1,609	—	770
Hungary	7,693	26	702	2,912	2,213	1,513	170	157
Romania	1,728	—	—	1,728	—	—	—	—
Bulgaria	16,385	4,476	442	4,553	4,550	1,055	1,159	150
AFRICA	41,526	8,305	3,195	4,280	11,408	12,770	899	669
South Africa	9,989	435	1,261	3,063	4,119	757	144	210
AMERICA	72,389	6,028	14,422	2,347	20,667	18,075	5,069	5,781
United States	50,092	1,873	11,118	1,155	17,451	11,250	3,323	3,922
Canada	9,935	3,337	1,056	408	1,462	2,897	271	504
Mexico	3,982	705	885	106	449	1,212	578	47
Venezuela	1,462	77	292	4	193	887	9	—
Brazil	4,084	3	29	586	929	391	872	1,274
Chile	367	1	57	2	59	234	14	—
Argentina	938	—	492	—	—	428	2	16
ASIA	129,703	15,814	10,782	14,324	44,784	30,221	5,412	8,366
Iraq	3,927	81	—	—	911	2,311	—	624
Israel	4,669	1,357	456	912	306	1,182	311	145
Other Near East	27,059	3,508	2,315	3,068	10,304	5,020	1,232	1,612
India	12,120	407	2,975	2,242	2,932	1,647	646	1,271
Indonesia	1,512	139	285	161	434	450	42	1
Singapore	1,105	67	55	227	174	360	—	222
China	36,146	4,952	1,344	3,136	14,339	9,746	1,182	1,447
Japan	16,592	240	1,863	243	8,639	3,427	1,005	1,175
Taiwan	5,262	1,071	976	2,075	106	689	118	227
AUSTRALIA & OCEANIA	10,037	264	1,243	423	4,730	2,087	321	969
Australia	9,150	232	1,195	415	4,042	1,981	320	965

Exchange Rate: $1 = 2.9440 Deutsche Mark.

(a) Includes other metalworking machines.

Note: Individual items may not add to totals due to rounding.

Source: VDW-Fachgemeinschaft Werkzeugmaschinen and VDMA.

GERMAN IMPORTS OF METAL CUTTING MACHINE TOOLS

By Type of Machine & By Destination, 1985

(Thousands of Dollars)

Origin	Total (a)	Drilling Machines	Gear Cutting	Grinding, Honing Polishing	Turret Lathes, Automatic	All Other Lathes	Boring & Milling Machines	Saw & Filing Machines	Planing, Slotting & Broaching	Other Metal Cutting
TOTAL	$440,350	$67,893	$7,838	$84,356	$46,987	$65,380	$98,721	$12,630	$1,513	$55,032
EUROPE	307,231	27,424	3,265	76,319	31,281	39,468	80,026	9,680	1,162	38,606
France	16,709	709	185	2,340	6,378	868	4,577	840	26	786
Belgium-Luxembourg	4,643	817	418	141	240	1,847	834	163	40	143
Netherlands	4,976	860	22	2,118	73	756	831	250	7	59
Italy	50,763	4,722	267	15,221	4,847	5,707	14,915	3,539	494	1,051
United Kingdom	16,701	1,395	91	4,411	873	3,048	3,745	1,359	4	1,775
Denmark	1,902	252	—	971	49	303	33	19	—	275
Sweden	14,245	898	149	8,456	565	3,527	504	73	7	66
Switzerland	142,824	15,199	1,635	33,827	12,428	7,697	36,886	1,703	119	33,330
Austria	18,921	163	58	4,776	3,395	8,039	1,502	728	7	253
Spain	13,800	1,135	—	910	850	1,729	8,011	469	149	547
Yugoslavia	2,132	—	—	1,142	128	406	456	—	—	—
U.S.S.R.	4,525	98	19	593	140	926	2,734	—	15	—
Poland	1,980	120	—	90	—	921	822	27	—	—
Czechoslovakia	6,286	331	345	587	902	815	3,299	7	—	—
Hungary	2,597	374	76	100	352	1,197	498	—	—	—
Romania	678	—	—	517	—	48	113	—	—	—
Other Europe	3,553	353	—	120	60	1,635	267	503	294	321
United States	16,161	4,071	4,515	4,712	791	594	479	443	245	311
Japan	102,801	32,148	54	1,448	13,895	19,602	17,414	2,311	—	15,929
All Other Countries	14,157	4,250	4	1,877	1,020	5,716	802	196	106	186

Exchange Rate: $1 = 2.9440 Deutsche Mark.

(a) Excludes parts.

Note: Individual items may not add to totals due to rounding.

Source: VDW-Fachgemeinschaft Werkzeugmaschinen and VDMA.

GERMAN IMPORTS OF METAL FORMING MACHINE TOOLS

By Type of Machine & By Destination, 1985

(Thousands of U.S. Dollars)

Origin	Total (a)	Hammers, Forging & Riveting, Bending & Forming	Mechanical Presses	Hydraulic Presses	Sheet Metal - working, Including Shears	Wire Working Machines	Bolt, Screw & Nut Working	Other Metal Forming Machines	Other Metal Working Machines
TOTAL	$145,777	$7,686	$12,342	$15,295	$49,603	$35,050	$9,145	$16,656	NA
EUROPE	112,981	7,290	9,615	13,998	37,411	25,886	3,115	15,666	NA
France	10,016	660	506	1,929	3,462	1,840	154	1,465	NA
Belgium - Luxembourg	8,044	322	1,264	2,812	2,707	205	389	345	NA
Netherlands	6,291	669	261	1,091	3,137	409	139	585	NA
Italy	21,372	1,952	2,205	1,883	5,751	3,197	1,450	4,934	NA
United Kingdom	4,659	997	418	224	1,194	770	209	847	NA
Denmark	2,915	158	264	363	1,892	180	4	54	NA
Sweden	2,954	222	303	553	978	587	16	279	NA
Switzerland	43,115	1,647	2,319	4,061	16,304	12,501	423	5,860	NA
Austria	4,569	275	305	702	840	1,532	11	904	NA
Spain	4,674	2	550	224	388	2,926	281	303	NA
Yugoslavia	309	—	175	11	123	—	—	—	NA
U.S.S.R.	292	—	245	5	18	—	24	—	NA
Poland	52	—	—	—	—	18	—	34	NA
Czechoslovakia	831	128	637	—	51	14	—	1	NA
Hungary	729	—	44	—	—	685	—	—	NA
Romania	—	—	—	—	—	—	—	—	NA
Other Europe	2,174	259	118	140	565	1,022	15	55	NA
United States	16,642	228	2,384	1,090	4,318	5,914	2,293	415	NA
Japan	13,388	151	343	161	7,546	2,703	2,354	130	NA
All Other Countries	2,766	17	—	46	328	547	1,383	445	NA

NA - Not Available. Exchange Rate: $1 = 2.9440 Deutsche Mark.

(a) Totals for individual countries exclude other metalworking machinery and exclude parts.

Note: Individual items may not add to totals due to rounding.

Source: VDW - Fachgemeinschaft Werkzeugmaschinen and VDMA.

JAPANESE PRODUCTION, IMPORTS, EXPORTS, AND DOMESTIC CONSUMPTION OF METAL CUTTING MACHINE TOOLS, 1966 to Date

(Millions of U.S. Dollars)

Year	Production	Imports	Exports	Domestic Consumption
1966	$ 212.4	$ 21.1	$ 40.6	$ 192.9
1967	350.1	35.7	49.0	336.8
1968	488.9	94.9	51.6	532.2
1969	666.6	95.8	60.4	702.0
1970	867.6	122.7	66.9	923.4
1971	750.5	113.6	80.1	783.2
1972	675.6	74.1	90.8	658.9
1973	1,117.0	78.3	129.3	1,066.0
1974	1,230.2	127.6	197.8	1,160.0
1975	774.9	72.7	207.6	640.0
1976	764.3	46.8	256.5	554.6
1977	1,165.1	58.5	430.1	793.5
1978	1,738.7	93.3	770.4	1,061.6
1979	2,208.9	119.6	942.8	1,385.7
1980	3,012.3	168.6	1,188.9	1,992.0
1981	3,860.3	175.1	1,409.2	2,626.3
1982	3,141.5	175.0	994.1	2,322.4
1983	2,953.6	136.9	999.7	2,090.8
1984	3,709.6	123.2	1,319.9	2,512.9
1985(p)	4,406.4	147.5	1,656.1	2,897.8

p – Preliminary.

Exchange rate: 1966–1970 $1 = 360 Yen; 1971 $1 = 350 Yen; 1972 $1 = 302 Yen; 1973 $1 = 272.5 Yen; 1974 $1 = 291.51 Yen; 1975 $1 = 296.8 Yen; 1976 $1 = 296.55 Yen; 1977 $1 = 268.51 Yen; 1978 $1 = 210.47 Yen; 1979 $1 = 219.17 Yen; 1980 $1 = 226.75 Yen; 1981 $1 = 220.53 Yen; 1982 $1 = 249.05 Yen; 1983 $1 = 237.52 Yen; 1984 $1 = 237.52 Yen; 1985 $ 1 = 238.54 Yen.

Sources: Japan, Ministry of International Trade and Industry and Ministry of Finance.

JAPANESE PRODUCTION, IMPORTS, AND EXPORTS OF METAL FORMING MACHINE TOOLS, 1967 to Date

(Values in Millions of U.S. Dollars)

	Production		Total Exports	Total Imports
Year	Units	Value	Value	
1967	17,571	$106.2	$ 9.1	$15.4
1968	21,905	160.8	12.9	38.9
1969	23,033	195.8	18.3	39.4
1970	26,345	241.5	24.3	37.5
1971	16,466	202.0	34.3	40.6
1972	19,720	216.3	54.9	29.2
1973	27,168	360.1	86.4	31.6
1974	23,854	420.0	109.8	48.6
1975	12,447	284.8	105.6	51.3
1976	15,978	294.6	113.4	24.1
1977	16,326	438.0	186.0	27.5
1978	18,526	613.7	241.1	26.8
1979	23,995	687.1	286.6	45.0
1980	28,598	818.0	264.0	52.5
1981	27,961	936.8	276.3	40.4
1982	20,443	653.3	269.3	45.3
1983	21,895	588.2	254.3	34.1
1984(r)	31,719	761.7	419.3	58.4
1985	28,110	910.2	523.1	71.5

r – Revised.

Source: Japan Metal Forming Machinery Builders' Association.

JAPANESE EMPLOYMENT IN THE METAL CUTTING MACHINE TOOL INDUSTRY

Number of Employees, 1964 to Date

Year	Employees	Year	Employees
1964	38,626	1975	40,925
1965	37,377	1976	34,509
1966	33,719	1977	32,168
1967	35,141	1978	28,154
1968	40,092	1979	31,113
1969	44,806	1980	33,737
1970	49,161	1981	33,420
1971	50,630	1982	34,204
1972	46,738	1983	33,705
1973	45,242	1984	33,628
1974	45,295	1985	34,644

Source: Japan, Ministry of International Trade and Industry.

JAPANESE PRODUCTION, EXPORTS, AND IMPORTS OF METAL FORMING MACHINE TOOLS

By Type of Machine, 1984 and 1985

(Values in Thousands of U.S. Dollars)

Type of Machine	1984(r)			1985		
	Production	Exports	Imports	Production	Exports	Imports
Total						
Units	31,719	32,788	3,305	28,110	29,773	2,628
Value	$758,812	$419,309	$58,389	$910,208	$523,057	$71,502
Hydraulic Presses						
Units	9,145	2,127	67	7,464	1,763	68
Value	$132,728	$ 58,627	$3,609	$139,930	$54,230	$6,150
Mechanical Presses						
Units	12,206	2,434	773	11,559	2,437	473
Value	$430,003	$113,402	$16,882	$558,837	$168,944	$18,127
Forging & Stamping Machines						
Units	844	398	25	838	479	25
Value	$ 34,401(a)	$28,800	$5,244	$ 41,347	$26,868	$4,502
Shearing Machines						
Units	6,290	7,711	468	5,608	6,962	293
Value	$ 79,073	$81,714	$5,610	$ 82,104	$83,219	$7,169
Bending Machines						
Units	1,539	3,807	209	1,236	2,791	155
Value	$ 24,868	$37,327	$ 8,971	$ 36,329	$49,660	$4,695
Wire Forming Machines						
Units	1,695	308	11	1,405	157	20
Value	$ 57,739	$9,772	$394	$ 51,660	$4,012	$1,987
Other Metal Forming Machines						
Units	—	10,005	1,752	—	15,184	1,593
Value	—	$89,666	$17,477	—	$136,124	$28,930

r – Revised. Exchange rate: 1984 $1 = 237.52 Yen; 1985 $1 = 238.54 Yen.

(a) Does not include Stamping.

Source: Japan Metal Forming Machinery Builders' Association.

JAPANESE PRODUCTION, EXPORTS AND IMPORTS OF METAL CUTTING MACHINE TOOLS

By Type of Machine, 1985

(Values in Thousands of U.S. Dollars)

	Production		Exports		Imports	
	Units	Value	Units	Value	Units	Value
TOTAL, (incl. NC)	175,230	$4,406,368	342,371	$1,656,074	15,019	$147,506
Horizontal Boring Machines	227	27,593	92	9,709	11	599
Jig Boring Machines	1,032	30,938	26	2,754	16	1,220
Boring Machines, NC	168	38,425	122	35,587	4	1,069
Boring Machines, N.E.C.	622	7,630	186	10,577	9	75
Radial Drilling Machines	972	12,966	172	3,165	—	—
Multi—Spindle Drilling Machines	480	7,395	142	4,733	—	—
Bench Drilling Machines	29,049	11,612	5,732	2,125	—	—
Drilling Machines, NC	633	19,125	422	18,462	8	319
Drilling Machines, N.E.C.	3,621	13,444	1,568	11,256	4,813	1,719
Gear Hobbing Machines	492	30,385	64	3,656	193	14,073
Gear Cutting Machines, N.E.C.	171	14,631	61	2,624		
Gear Finishing Machines	336	23,581	39	2,427		
Cylindrical Grinding Machines	2,007	107,869	245	21,544	145	9,621
Internal Grinding Machines	847	63,813	73	4,569	50	2,792
Surface Grinding Machines	6,727	137,369	1,738	26,566	1,210	16,970
Centerless Grinding Machines	901	51,245	153	10,791	—	—
Tool Grinding Machines (Universal)	1,499	18,932	195	1,819	—	—
Grinding Machines, NC	1,049	78,012	200	25,187	148	21,917
Grinding Machines, N.E.C.	1,276	91,414	18,231	72,759	3,216	21,678
Center Lathes	5,191	60,338	726	8,326	1,559	8,204
Automatic Lathes	5,761	97,405	665	14,916	130	3,048
Vertical Lathes, NC	512	52,021	8,180	487,876	34	1,765
Horizontal Lathes, NC	18,572	874,361				
Lathes, N.E.C.	3,491	30,569	2,177	11,700	223	3,362
Knee Type Milling Machines	5,898	84,967	343	6,209	295	2,557
Bed Type Milling Machines	1,781	40,266	—	—	—	—
Copy Milling Machines	628	15,586	216	2,406	374	658
Milling Machines, NC	2,664	160,837	568	69,917	78	3,266
Milling Machines, N.E.C.	435	7,797	2,411	18,106	720	4,280
Machining Centers, Vertical	8,754	567,880	6,167	556,712	—	—
Machining Centers, Horizontal	2,952	386,962			—	—
Machining Centers, N.E.C.	1,639	165,775			—	—
Electrical Discharge Machines, NC	5,829	375,803	—	—	125	13,595
Electrical Discharge Machines, N.E.C.	588	17,779	—	—	—	—
Special Purpose Machines, NC	1,529	187,335	—	—	—	—
Special Purpose Machines, N.E.C.	3,230	293,867	—	—	—	—
Other Metal Cutting Machines, NC	663	40,777	—	—	62	3,521
All Other Metal Cutting Machines, N.E.C.	53,004	159,696	291,457	209,596	1,596	11,193

Exchange rate: $1 = 238.54 Yen.

Sources: Japan, Ministry of International Trade and Industry and Ministry of Finance.

JAPANESE EXPORTS OF METAL CUTTING MACHINE TOOLS

By Type of Machine, For Selected Destinations, 1985

(Values in Thousands of U.S. Dollars)

Type of Machine	Destination									
	U.S.A.	West Germany	Belgium	United Kingdom	Australia	U.S.S.R.	Korea	People's Rep. of China	India	Canada
GRAND TOTAL										
UNITS	142,446	5,075	2,636	6,360	36,885	468	2,292	16,367	386	41,129
VALUE	$708,816	$118,810	$61,059	$62,283	$56,284	$70,793	$117,683	$72,151	$38,484	$35,340
Boring Machines										
Units	41	1	—	4	54	43	65	26	21	12
Value	$6,154	$797	—	$340	$15,758	$12,857	$12,572	$ 1,463	$3,421	$1,266
Drilling Machines										
Units	1,885	714	135	284	115	3	397	193	33	98
Value	$8,242	$1,752	$226	$918	$4,284	$ 361	$11,487	$ 981	$2,624	$583
Gear Cutting & Finishing										
Units	4	—	—	2	1	19	44	22	1	—
Value	$583	—	—	$71	$42	$ 688	$2,935	$ 2,264	$18	—
Grinding Machines										
Units	7,522	121	8	1,311	323	248	437	707	87	626
Value	$30,167	$1,731	$8	$5,496	$1,446	$35,369	$26,264	$13,398	$7,663	$1,002
Lathes										
Units	4,165	1,978	623	639	318	81	235	542	88	235
Value	$231,831	$47,149	$29,182	$29,961	$16,052	$12,396	$11,134	$17,603	$11,767	$10,468
Milling Machines										
Units	2,422	27	1	60	117	11	106	176	54	27
Value	$33,730	$1,048	$545	$1,333	$3,123	$ 465	$16,882	$11,294	$3,366	$3,002
Planing Machines										
Units	—	—	—	—	—	—	5	1	—	—
Value	—	—	—	—	—	—	$381	$ 235	—	—
Machining Centers										
Units	3,602	617	371	214	120	43	41	68	41	141
Value	$315,796	$46,105	$31,219	$20,584	$9,466	$ 7,642	$10,229	$13,029	$6,527	$13,155
Other Metal Cutting Machines										
Units	122,805	1,617	1,498	3,846	35,837	20	962	14,632	61	39,990
Value	$82,313	$20,936	$369	$6,150	$6,116	$ 1,010	$25,803	$11,889	$3,098	$5,865

Exchange Rate: $1 = 238.54 Yen.

Individual items may not add to totals due to rounding.

Source: Japan, Ministry of Finance.

JAPANESE PRODUCTION OF NUMERICALLY CONTROLLED METAL CUTTING MACHINE TOOLS

By Type of Machine, 1979 to Date

(Values in Thousands of U.S. Dollars)

Type of Machine	1979	1980	1981	1982	1983	1984	1985
GRAND TOTAL							
Units	14,317	22,069	25,926	24,048	26,398	38,024	44,964
Value	$937,423	$1,496,512	$1,967,642	$1,687,203	$1,794,548	$2,482,88	$2,947,296
Boring Machines							
Units	52	103	135	134	140	215	168
Value	$ 17,293	$ 35,652	$ 57,298	$ 44,529	$ 42,236	$ 43,499	$ 38,425
Drilling Machines							
Units	143	249	301	201	501	631	633
Value	$6,055	$8,710	$9,781	$7,380	$17,817	$20,470	$19,125
Milling Machines							
Units	979	1,451	2,381	2,308	2,467	2,775	2,664
Value	$61,026	$83,215	$138,430	$134,403	$141,824	$146,779	$160,837
Grinding Machines							
Units	93	154	235	296	338	674	1,049
Value	$7,401	$15,078	$19,653	$24,035	$24,225	$49,575	$78,012
Lathes							
Units	8,203	12,036	12,134	10,298	10,020	16,550	19,084
Value	$448,602	$672,891	$731,755	$560,823	$511,309	$811,515	$926,381
Special Machines							
Units	62	101	103	137	497	1,193	1,529
Value	$18,123	$28,370	$53,149	$39,795	$62,799	$129,383	$187,335
Elec. Discharge Machines							
Units	1,593	2,554	3,020	3,522	4,187	5,034	5,829
Value	$80,298	$143,541	$180,846	$196,932	$254,130	$314,858	$375,803
Machining Centers							
Units	2,927	5,231	7,393	6,936	7,833	10,252	13,345
Value	$277,935	$491,383	$749,644	$649,219	$702,913	$896,994	$1,120,600
Other NC Metal Cutting Machines							
Units	265	190	224	216	415	700	663
Value	$20,692	$17,671	$27,085	$30,086	$37,294	$69,813	$40,777

NA – Not Available.

Exchange rate: 1979 $1 = 219.17 Yen; 1980 $1 = 226.75 Yen; 1981 $1 = 220.53 Yen; 1982 $1 = 249.05 Yen; 1983 $1 = 237.52 Yen; 1984 $1 = 237.52 Yen; 1985 $1 = 238.54 Yen.

Source: Japan, Ministry of International Trade and Industry.

JAPANESE TRADE WITH THE UNITED STATES NUMERICALLY CONTROLLED METAL CUTTING MACHINE TOOLS

By Type of Machine, 1985

(Values in Thousands of U.S. Dollars)

Type of Machine	Exports to U.S.		Imports from U.S.	
	Units	Value	Units	Value
Boring Machines	27	$ 4,624	—	—
Drilling Machines	188	6,192	1	$ 21
Grinding Machines	84	10,451	31	6,590
Lathes	3,834	229,010	4	855
Milling	254	30,729	2	1,371
Machines Centers	3,602	315,796	—	—
Other	—	—	27	637

Exchange rate: $1 = 238.54 Yen.

Source: Japan, Ministry of Finance.

JAPANESE EXPORTS OF METAL CUTTING MACHINE TOOLS

Selected Destinations, 1983 to Date

(Values in Thousands of U.S. Dollars)

	1983		1984		1985	
Destination	Units	Value	Units	Value	Units	Value
TOTAL EXPORTS	296,306	$999,684	364.480	$1,319,901	342,371	$1,656,074
North & South America	70	$ 10,197	141	$ 2,964	103	$ 2,029
Brazil Canada	23,408	13,889	26,206	22,348	4,129	35,340
Mexico	157	1,958	253	26,166	358	5,928
U.S.A.	132,375	364,517	189,778	601,436	142,446	708,816
Western Europe						
Belgium	737	39,112	1,646	37,231	2,636	61,059
France	4,935	15,136	2,727	13,557	2,828	23,694
Netherlands	2,422	5,338	1,328	7,267	1,799	12,786
Norway	475	1,857	482	2,631	930	5,265
Sweden	1,347	14,268	987	16,891	1,439	25,941
United Kingdom	7,271	38,056	6,179	51,983	6,360	62,283
West Germany	3,927	53,920	3,516	66,618	5,075	118,810
Eastern Europe						
Poland	9	1,183	8	1,124	5	1,010
Romania	—	—	—	—	2	126
U.S.S.R.	579	69,880	442	45,158	468	70,793
Asia						
Burma	168	530	160	480	163	797
Korean Republic	2,154	93,007	1,886	69,224	2,292	117,683
People's Republic of	605	5,894	3,857	16,146	16,367	72,151
Philippines	1,660	1,895	371	1,692	237	1,035
Singapore	11,347	20,912	11,786	32,780	4,248	20,978
Taiwan	9,487	38,102	11,150	51,410	8,432	34,527
Thailand	7,031	6,450	5,438	24,217	5,177	19,536
All Other Countries						
Australia	17,669	15,893	30,307	37,264	36,885	56,284
South Africa	5,711	12,003	6,056	17,055	2,405	6,636
All Other Countries	62,762	175,686	59,776	174,259	97,587	192,567

Exchange rate: 1983 $1 = 237.52 Yen; 1984 $1 = 237.52 Yen; 1985 $1 = 238.54 Yen.

Source: Japan, Ministry of Finance.

JAPANESE EXPORTS OF METAL CUTTING MACHINE TOOLS TO THE U.S.

1980–1985

(Values in Thousands of U.S. Dollars, F.O.B. Japan)

	Total	Lathes	Drilling Machines	Boring Machines	Milling Machines	Grinding Machines	Other
1980							
Units	54,228	4,109	1,053	210	3,426	1,843	43,587
Value	$471,131	$232,110	$8,983	$22,046	$26,430	$29,019	$152,543
1981							
Units	137,009	4,675	1,427	203	859	3,205	126,640
Value	$691,099	$337,151	$7,831	$20,528	$38,253	$27,865	$259,470
1982							
Units	62,208	2,799	1,007	96	1,877	3,213	53,216
Value	$446,220	$196,149	$3,839	$15,844	$16,398	$25,220	$188,769
1983							
Units	132,375	1,981	800	34	1,750	2,196	125,614
Value	$364,517	$120,167	$5,978	$ 4,555	$10,172	$13,691	$209,953
1984							
Units	189,778	3,455	1,464	80	2,656	3,711	178,412
Value	$601,436	$198,606	$8,669	$ 8,795	$33,294	$27,581	$324,491
1985							
Units	142,446	4,165	1,885	41	2,422	7,522	126,411
Value	$708,816	$231,831	$8,242	$ 6,154	$33,730	$30,167	$389,692

Exchange rate: 1980 $1 = 226.75 Yen; 1981 $1 = 220.53 Yen; 1982 $1 = 249.05 Yen; 1983 $1 = 237.52 Yen; 1984 $1 = 237.52 Yen; 1985 $1 = 238.54 Yen.

Source: Japan, Ministry of Finance.

JAPANESE IMPORTS OF METAL CUTTING MACHINE TOOLS

From Selected Countries, 1983 to Date

(Values in Thousands of U.S. Dollars)

	1983		1984		1985	
Country of Origin	Units	Value	Units	Value	Units	Value
TOTAL IMPORTS	10,879	$136,902	18,811	$123,185	15,019	$147,506
United States	1,068	$ 38,275	1,200	$ 18,630	1,221	$ 21,674
Western Europe						
Austria	228	206	125	105	172	277
France	424	530	656	951	494	683
Italy	53	2,021	96	2,349	181	3,664
Sweden	107	669	102	564	84	1,899
Switzerland	746	28,549	893	40,359	1,144	51,245
United Kingdom	155	1,373	234	1,890	335	2,960
West Germany	734	39,352	861	25,122	940	31,148
Eastern Europe						
Czechoslovakia	8	674	46	1,718	7	398
East Germany	20	1,831	31	2,324	32	4,083
Poland	—	—	—	—	—	—
U.S.S.R.	172	3,238	124	3,532	145	4,607
Asia						
Singapore	650	6,101	948	9,229	940	8,732
Taiwan	5,833	3,608	12,367	6,012	8,434	6,875
Other Countries	681	10,475	1,128	10,399	890	9,261

Exchange rate: 1983 $1 = 237.52 Yen; 1984 $1 = 237.52 Yen; 1985 $1 = 238.54 Yen.

Source: Japan, Ministry of Finance.

JAPANESE IMPORTS OF METAL CUTTING MACHINE TOOLS
By Type of Machine and Selected Countries, 1985
(Values in Thousands of U.S. Dollars)

	Destination									
Type of Machine	U.S.A.	West Germany	Switzerland	Singapore	Korea	Taiwan	France	United Kingdom	Eastern Europe(a)	U.S.S.R.
GRAND TOTAL										
UNITS	1,221	940	1,144	940	441	8,434	494	335	39	145
VALUE	$21,674	$31,148	$51,245	$8,732	$2,951	$6,875	$683	$2,960	$4,481	$4,607
Boring Machines										
Units	2	—	17	—	—	—	—	1	—	1
Value	$ 75	—	$ 1,840	—	—	—	—	$ 176	—	$ 92
Drilling Machines										
Units	318	6	20	—	3	4,464	—	1	—	—
Value	$ 239	$ 17	$ 390	—	$ 63	$ 411	—	$ 2	—	—
Gear Cutting and Finishing										
Units	49	26	72	—	—	—	—	18	8	5
Value	$ 3,454	$ 2,360	$ 4,314	—	—	—	—	$ 520	$ 994	$ 239
Grinding Machines										
Units	590	326	307	883	11	2,145	41	168	16	34
Value	$13,360	$22,269	$17,494	$8,414	$ 105	$ 599	$ 234	$1,807	$2,620	$ 365
Lathes										
Units	19	66	111	—	303	952	1	94	1	56
Value	$ 1,283	$ 1,098	$ 4,435	—	$1,891	$4,012	$ 67	$ 109	$ 38	$1,237
Milling Machines										
Units	16	46	31	57	122	712	359	6	—	48
Value	$ 1,702	$ 1,212	$ 1,471	$ 319	$ 859	$1,777	$ 264	$ 226	—	$2,587
Planing Machines										
Units	—	—	—	—	—	—	—	3	—	1
Value	—	—	—	—	—	—	—	$ 8	—	$ 92
Other Metal Cutting Machines										
Units	227	470	586	—	2	161	93	44	4	—
Value	$ 1,559	$ 4,196	$21,296	—	$ 29	$ 71	$ 109	$ 113	$ 180	—

(a) Includes Czechoslovakia and East Germany.

Note: Individual items may not add to totals due to rounding.

Exchange rate: $1 = 238.54 Yen.

Source: Japan, Ministry of Finance.

6

UNITED KINGDOM NET NEW ORDERS AND SHIPMENTS OF MACHINE TOOLS
1963 to Date
(Millions of Dollars)

Year	Net New Orders			Shipments			Unfilled Orders
	Total	Domestic	Foreign	Total	Domestic	Foreign	
1963	$ 265.4	$171.3	$ 94.1	$ 319.2	$209.7	$109.6	$193.0
1964	388.4	282.0	106.5	339.5	234.1	105.4	241.5
1965	442.0	322.0	120.0	395.9	272.9	123.0	292.0
1966	448.3	319.5	128.8	459.2	332.9	126.3	310.0
1967	446.6	276.7	169.9	473.7	342.8	130.9	279.2
1968	441.1	290.6	150.5	404.6	272.4	132.2	278.6
1969	569.3	361.7	207.6	453.8	285.8	168.0	394.1
1970	513.4	313.9	199.4	524.6	329.5	195.1	382.8
1971	380.9	199.8	181.1	513.1	300.6	212.4	261.8
1972	480.4	303.5	176.9	462.1	279.2	182.9	283.5
1973	701.2	429.1	272.1	487.2	286.8	200.4	473.0
1974	813.7	448.8	364.9	595.0	350.6	244.4	731.9
1975	548.4	321.5	226.9	723.0	414.2	308.8	510.6
1976	570.8	346.8	224.0	635.8	377.5	258.3	350.4
1977	839.8	553.5	286.3	707.1	443.5	263.6	471.4
1978	1,046.4	689.3	357.1	960.0	599.0	361.0	604.8
1979	1,260.3	771.6	488.7	1,205.9	793.6	412.3	742.7
1980	1,038.8	562.3	476.5	1,370.6	813.9	556.7	418.7
1981	865.3	273.2	592.1	885.3	480.6	404.7	304.2
1982	576.8	327.0	249.8	779.0	429.4	349.6	157.5
1983	471.7	259.7	212.0	556.8	331.3	225.5	NA
1984(r)	535.5	284.3	251.2	527.6	311.3	216.3	NA
1985(p)	613.6	314.7	298.9	596.1	330.6	265.5	NA

NA - Not Available.   p - Preliminary.   r - Revised.

Source: The Machine Tool Trades Association and the Department of Trade and Industry.

UNITED KINGDOM EMPLOYMENT IN THE MACHINE TOOL INDUSTRY
Number of Employees, 1967 to Date

Mid-Year	Employees	Mid – Year	Employees
1967	65,500	1977	47,675
1968	63,600	1978	48,500
1969	63,700	1979	48,350
1970	65,100	1980	46,350
1971	59,000	1981	40,500
1972	50,100	1982	37,000
1973	48,400	1983(r)	30,400
1974	50,000	1984(r)	29,500
1975	49,100	1985(p)	30,400
1976	47,050		

p - Preliminary.   r - Revised.

Source: The Machine Tool Trades Association and the Department of Trade and Industry.

UNITED KINGDOM SHIPMENTS OF NUMERICALLY CONTROLLED MACHINE TOOLS

By Type of Machine, Units and Value, 1984 and 1985

(Values in Thousands of U.S. Dollars)

Type of Machine	1984		1985	
	Units	Value	Units	Value
TOTAL (excluding parts)	NA	$157,594	NA	$184,483
Drilling Machines Boring Machines Milling Machines	NA	36,774	1,051	41,211
Machining Centers - Horizontal	111	19,311	143	24,386
Machining Centers - Vertical	226	22,819	456	38,685
Machining Centers (manual tool change) and Indexing Turret	(a)	(a)	(a)	(a)
Lathes	816	40,419	933	43,538
Other Numerically Controlled Machines	387	38,272	435	36,662

Exchange Rate: 1984: 1 Pound = $1.3363; 1985: 1 Pound = $1.2963.

(a) "Machining Centers (manual tool change) and Indexing Turret" are included with Drilling, Boring, and Mil Machines.

Note: Individual items may not add to totals due to rounding.

Source: United Kingdom, Department of Trade and Industry.

UNITED KINGDOM ORDERS AND SHIPMENTS OF NUMERICALLY CONTROLLED MACHINE TOOLS

1969 to Date

(Values in Thousands of Dollars)

	New Orders				Shipments			
	Total		Foreign		Total		Foreign	
Year	Units	Value	Units	Value	Units	Value	Units	Value
1969(a)	693	$ 42,245	248	$ 16,596	543	$ 35,105	189	$14,738
1970(a)	725	52,561	350	26,978	600	37,773	241	15,848
1971	343	26,320	156	12,842	590	44,591	280	23,023
1972	548	42,199	189	14,551	381	27,173	150	12,735
1973	634	44,562	238	18,884	462	30,379	178	13,255
1974	739	65,520	353	32,362	709	37,452	246	15,171
1975	283	28,833	70	8,610	739	52,719	271	20,898
1976	535	57,429	157	17,820	612	48,635	192	17,598
1977	614	78,484	155	22,406	724	58,307	NA	17,347(b)
1978	681	105,986	209	26,135	969	102,376	245	29,086
1979	1,262	180,516	399	48,063	1,058	139,125	251	36,078
1980	978	160,736	387	60,193	1,240	198,985	421	54,712
1981	1,237	192,812	398	75,702	1,196	165,037	399	56,167
1982	1,370	124,583	NA	35,280	1,510	173,718	424	74,738
1983	2,010	125,721	NA	42,646	1,825	130,767	489	43,804
1984(r)	NA	152,698	NA	64,093	NA	157,594	815	51,033
1985(p)	NA	215,067	NA	101,380	NA	184,483	NA	78,726

NA - Not Available. p - Preliminary. r - Revised.

(a) Includes parts.
(b) Does not include figures for Drilling, Boring or Milling Machines.

Source: The Machine Tool Trades Association, and United Kingdom, Department of Trade and Industry.

UNITED KINGDOM SHIPMENTS OF METAL CUTTING MACHINE TOOLS (a)
By Type of Machine, Units and Value, 1984 and 1985
(Values in Thousands of U.S. Dollars)

Type of Machine	1984 (r)		1985	
	Units	Value	Units	Value
TOTAL	—	$249,744	—	$266,633
Boring Machines				
Fine	72	1,752	NA	2,880
Horizontal				
Jig, Vertical and Other	—	—	—	—
Drilling Machines				
Vertical	901 E	1,418	755 E	2,056
Radial and Other	60	1,155	33	1,108
Gear Cutting and Finishing Machines)	(c)	(c)	(c)	(c)
Grinding and Polishing Machines				
Cylindrical—External	129	7,561	266	13,135
Cylindrical—Universal	706	17,860		
Cylindrical—Internal			1,021	12,500
Surface				
Tool and Cutter	481	3,325		
Other Grinding	171	2,188	183	4,400
Honing and Lapping	378	5,646 (b)	699	6,899
Lathes				
Automatic (excl. plugboard)	NA	33,794	5,879	44,110
Center	295	6,373	156	4,187
Plugboard				
Other				
Milling Machines				
Knee and Column	1,435	15,298	1,570	15,976
Bed Type	24	1,895	24	1,618
Other	137	1,454	131	1,020
Other Metal Cutting				
Transfer, Single Station and Unit Head Machines	437 E	25,990	156	21,248
Sawing and Cut-Off	8,948 E	15,770 E	10,259 E	10,959
Screwing and Threading				
Other Metal Cutting, N.E.C.	116	12,358	204	20,091
Parts for Metal Cutting Machine Tools	—	93,911	—	101,176

NA - Not Available. r - Revised. E - Estimate.

(a) Excludes numerically controlled machines.
(b) Includes cam shaft, cam, spline, jig, profile, swing frame, billet, cone centre and rack track.

Note: Individual items may not add to totals due to rounding.

Exchange Rate: 1984 1 Pound = $1.3363; 1985: 1 Pound = $1.2963.

Source: United Kingdom, Department of Trade and Industry.

UNITED KINGDOM SHIPMENTS OF METAL FORMING MACHINE TOOLS (a)

By Type of Machine, Units and Value, 1984 and 1985

(Values in Thousands of U.S. Dollars)

Type of Machine	1984		1985	
	Units	Value	Units	Value
TOTAL	—	$94,086	—	$108,348
Presses				
Hydraulic—Open Front	305	10,073	(b)	(b)
Hydraulic— Straight, Extrusion & Other	(b)	(b)	(b)	(b)
Mechanical— Open Front	162	2,767	139	3,263
Mechanical— Straight Sided	(b)	(b)	(b)	(b)
Other Mechanical	41	3,961	(b)	(b)
Forging Machines	1,730	1,370	NA	(b)
Shearing Machines	NA	6,715	(b)	(b)
Plate & Sheet Bending & Forming	(b)	(b)	(b)	(b)
Bar, Tube & Section Drawing & Forming	294	13,474	487	10,325
Wire and Strip Drawing & Forming	192	3,075	195	4,770
Other Bending & Working incl. Sheet Metal	(b)	(b)	(b)	(b)
Riveting and Other Metal Forming	1,434	22,968	1,514	61,622
Parts for Metal Forming Machine Tools	—	29,686	—	28,368

Exchange Rate: 1984: 1 Pound = $1.3363: 1985: 1 Pound = $1.2963.

(a) Excludes numerically controlled machines.
(b) Included in "Riveting and Other Metal Forming."

Source: United Kingdom, Department of Trade and Industry.

UNITED KINGDOM IMPORTS AND EXPORTS OF MACHINE TOOLS

New and Used, For Selected Countries, 1985

(Values in U.S. Dollars)

Imports		Exports			
Origin	Value	Destination	Value	Destination	Value
West Germany	$108,920,788	United States	$88,701,967	Singapore	$5,181,021
Japan	87,774,189	West Germany	32,953,691	Saudi Arabia	5,051,051
U.S.A.	54,524,115	Canada	19,023,105	Denmark	5,030,104
Switzerland	34,060,098	France	17,282,430	Iraq	4,796,576
Italy	27,311,764	China	13,826,535	Japan	4,401,313
Sweden	11,020,233	India	11,529,861	Pakistan	4,267,786
France	10,562,869	Australia	9,763,695	Finland	4,166,937
Spain	9,432,313	Sweden	9,302,579	Israel	3,883,371
Belgium - Lux.	7,657,164	U.S.S.R	9,184,467	Spain	3,610,832
Taiwan	6,935,587	Switzerland	8,052,964	Egypt	3,563,839
United Kingdom	6,629,994	Netherlands	7,703,506	Iran	3,000,330
Netherlands	6,579,060	South Africa	7,316,217	Mexico	2,510,807
Denmark	3,947,071	Irish Republic	7,048,961	Turkey	2,458,920
East Germany	3,079,506	Italy	6,549,138	Norway	2,364,534
Irish Republic	2,554,932	Belgium - Lux.	6,110,806	New Zealand	2,260,187

Exchange Rate: 1 Pound = $1.2963.

Source: The Department of Trade and Industry.

UNITED KINGDOM EXPORTS OF NEW MACHINE TOOLS, 1984

By Type of Machine, Total and N/C; Total & Major Countries of Destination

(Values in Thousands of U.S. Dollars)

Type of Machine	Total World	United States	West Germany	Rep. of So. Africa	France	U.S.S.R.	India	Canada
Grand Total (incl. N/C)								
Units	18,226	3,484	1,152	766	923	122	247	748
Value	$278,629	$70,036	$26,789	$11,107	$15,022	$14,326	$9,993	$7,510
Boring (incl. N/C)								
Units	294	65	38	12	7	—	15	9
Value	$ 12,389	$ 2,516	$ 3,231	$ 1,353	$ 96	—	$ 1,308	$ 267
Boring, N/C								
Units	44	4	21	6	—	—	4	—
Value	$ 7,450	$ 1,033	$ 2,966	$ 1,067	—	—	$ 1,079	—
Drilling (incl, N/C)								
Units	1,206	66	55	73	12	2	14	5
Value	$ 6,691	$ 459	$ 673	$ 253	$ 195	$ 138	$ 278	$ 64
Drilling, N/C								
Units	20	—	4	—	—	1	2	—
Value	$ 1,644	—	$ 270	—	—	$ 136	$ 84	—
Gear Cutting & Finishing (incl. N/C)								
Units	40	13	2	1	1	11	1	—
Value	$ 4,383	$ 1,175	$ 248	$ 34	$ 39	$ 1,327	$ 19	—
Gear Cutting & Finishing, NC								
Units	1	1	—	—	—	—	--	—
Value	$ 134	$ 134	—	—	—	—	—	—
Grinding & Polishing (incl. N/C)								
Units	3,069	640	221	127	126	24	73	200
Value	$ 49,954	$19,410	$ 5,546	$ 1,444	$ 1,656	$ 1,773	$ 2,202	$ 1,214
Grinding & Polishing, NC								
Units	50	25	11	--	1	—	1	1
Value	$ 13,394	$ 7,724	$ 2,198	—	$ 165	—	$ 58	$ 451
Lathes (incl. N/C)								
Units	3,460	853	230	40	193	53	25	168
Value	$ 51,707	$15,450	$ 4,179	$ 623	$ 3,022	$ 2,994	$ 936	$ 1,215
Lathes, N/C								
Units	226	93	15	1	24	2	5	28
Value	$ 13,676	$ 4,693	$ 1,934	$ 97	$ 1,387	$ 154	$ 648	$ 297
Milling (incl. N/C)								
Units	1,076	170	65	23	37	2	4	28
Value	$ 26,143	$ 7,138	$ 1,928	$ 608	$ 1,109	$ 1,325	$ 55	$ 629
Milling, N/C								
Unit	161	45	22	9	11	—	—	6
Value	$ 7,981	$ 2,345	$ 1,331	$ 258	$ 654	—	—	$ 423
Other Metal Cutting								
Units	2,861	1,006	135	124	133	16	34	180
Value	$ 38,334	$ 7,798	$ 4,291	$ 1,148	$ 4,915	$ 165	$ 3,105	$ 1,378
Total Metal Forming								
Units	6,200	669	406	366	414	14	81	158
Value	$ 89,026	$16,090	$ 6,693	$ 5,644	$ 3,990	$ 6,604	$ 2,090	$ 2,743

Exchange Rate: 1 Pound = $1.3363.

Source: The Department of Trade and Industry.

UNITED KINGDOM EXPORTS OF NEW MACHINE TOOLS, 1985

By Type of Machine, Total and N/C; Total & Major Countries of Destination

(Values in Thousands of U.S. Dollars)

Type of Machine	Total World	United States	West Germany	Canada	France	China (PRC)	India	Australia
Grand Total (incl. N/C)								
Units	24,972	5,112	1,499	1,407	1,024	111	551	841
Value	$322,040	$81,221	$31,802	$15,124	$16,605	$13,770	$10,838	$9,112
Boring (incl. N/C)								
Units	443	56	26	20	13	1	9	3
Value	$ 18,092	$ 3,882	$ 1,822	$ 1,920	$ 412	$ 38	$ 1,146	$ 47
Boring, N/C								
Units	63	14	10	5	1	—	3	—
Value	$ 11,773	$ 2,541	$ 1,601	$ 1,258	$ 271	—	$ 744	—
Drilling (incl. N/C)								
Units	696	53	71	15	47	—	13	29
Value	$ 7,030	$ 920	$ 1,695	$ 114	$ 513	—	$ 323	$ 113
Drilling, N/C								
Units	. 39	8	6	—	—	—	1	—
Value	$ 3,218	$ 481	$ 1,279	—	—	—	$ 87	—
Gear Cutting & Finishing (incl. N/C)								
Units	48	12	1	5	—	5	7	—
Value	$ 3,113	$ 1,052	$ 115	$ 332	—	$ 575	$ 196	—
Gear Cutting & Finishing, N/C								
Units	5	—	—	—	—	—	—	—
Value	$ 224	—	—	—	—	—	—	—
Grinding & Polishing(incl. N/C)								
Units	4,472	1,160	245	466	215	23	126	87
Value	$ 49,180	$ 13,236	$ 5,893	$ 1,647	$ 1,873	$ 761	$ 2,389	$ 677
Grinding & Polishing, N/C								
Units	55	12	13	—	—	—	2	—
Value	$ 8,410	$ 1,902	$ 2,441	—	—	—	$ 460	—
Lathes (incl. N/C)								
Units	3,889	969	376	240	204	7	22	273
Value	$ 56,538	$ 17,572	$ 5,560	$ 1,949	$ 4,928	$ 967	$ 1,147	$2,544
Lathes, N/C								
Units	324	104	21	7	26	3	3	2
Value	$ 14,176	$ 3,811	$ 1,960	$ 164	$ 2,087	$ 776	$ 345	$ 139
Milling (incl. N/C)								
Units	1,218	195	43	133	44	11	7	21
Value	$ 33,230	$ 7,944	$ 1,972	$ 1,427	$ 1,534	$ 1,342	$ 300	$ 344
Milling, N/C								
Units	335	132	19	6	17	8	1	4
Value	$ 16,610	$ 5,445	$ 1,298	$ 238	$ 924	$ 1,255	$ 26	$ 143
Other Metal Cutting								
Units	2,992	957	195	194	86	9	11	118
Value	$ 50,955	$ 13,710	$ 8,084	$ 1,937	$ 2,577	$ 3,160	$ 1,589	$ 788
Total Metal Forming								
Units	11,214	1,710	542	334	415	55	356	310
Value	$103,902	$ 22,905	$ 6,661	$ 5,798	$ 4,768	$ 6,927	$ 3,748	$4,599

Exchange Rate: 1 Pound = $1.2963.

Source: The Department of Trade and Industry.

UNITED KINGDOM IMPORTS OF NEW MACHINE TOOLS, 1984

By Type of Machine, Total and N/C; Total & Major Countries of Origin

(Values in Thousands of U.S. Dollars)

Type of Machine	Total World	West Germany	United States	Japan	Switzerland	Italy
Grand Total (incl. N/C)						
Units	54,117	8,075	2,583	2,339	828	11,892
Value	$339,534	$102,668	$45,529	$67,581	$24,995	$27,581
Boring (incl. N/C)						
Units	406	75	24	13	10	20
Value	$ 17,160	$ 8,467	$ 1,243	$ 818	$ 92	$ 398
Boring, N/C						
Units	75	39	2	8	1	1
Value	$ 13,343	$ 7,082	$ 473	$ 803	$ 48	$ 124
Drilling (incl. N/C)						
Units	6,127	215	189	37	38	66
Value	$ 13,301	$ 2,656	$ 5,373	$ 528	$ 273	$ 1,186
Drilling, N/C						
Units	8	3	2	—	—	—
Value	$ 315	$ 262	$ 19	—	—	—
Gear Cutting & Finishing (incl. N/C)						
Units	47	28	7	—	1	2
Value	$ 4,318	$ 2,810	$ 762	—	$ 200	$ 80
Gear Cutting & Finishing, N/C						
Units	17	12	3	—	1	—
Value	$ 2,011	$ 1,306	$ 426	—	$ 200	—
Grinding & Polishing (incl. N/C)						
Units	24,920	3,980	571	364	154	7,413
Value	$ 41,602	$ 15,271	$ 5,941	$ 3,165	$ 5,709	$ 3,891
Grinding & Polishing, N/C						
Units	80	43	10	5	9	9
Value	$ 12,490	$ 6,806	$ 2,295	$ 321	$ 1,396	$ 1,070
Lathes (incl. N/C)						
Units	2,362	456	221	465	72	74
Value	$ 80,652	$ 25,508	$11,081	$26,622	$ 2,115	$ 2,432
Lathes, N/C						
Units	859	188	68	429	7	30
Value	$ 63,620	$ 21,274	$ 5,945	$25,709	$ 630	$ 1,523
Milling (incl. N/C)						
Units	1,277	274	19	39	16	107
Value	$ 22,116	$ 7,304	$ 534	$ 2,252	$ 1,024	$ 3,875
Milling, N/C						
Units	174	69	7	26	5	30
Value	$ 12,947	$ 5,187	$ 321	$ 2,028	$ 719	$ 3,101
Other Metal Cutting						
Units	9,457	1,149	288	1,153	143	2,388
Value	$ 72,583	$ 15,356	$ 7,747	$25,868	$ 5,646	$ 8,712
Total Metal Forming						
Units	9,521	1,898	1,264	268	394	1,822
Value	$ 87,799	$ 25,293	$12,848	$ 8,324	$ 9,938	$ 7,007

Exchange Rate: 1 Pound = $1.3363.

Source: The Department of Trade and Industry.

UNITED KINGDOM IMPORTS OF NEW MACHINE TOOLS, 1985

By Type of Machine, Total and N/C; Total & Major Countries of Origin

(Values in Thousands of U.S. Dollars)

Type of Machine	Total World	West Germany	Japan	United States	Switzerland	Italy	France	Sweden
Grand Total (incl. N/C)								
Units	79,707	18,972	3,065	3,088	1,052	6,359	3,698	670
Value	$386,057	$107,881	$87,435	$51,069	$33,714	$27,088	$10,253	$10,899
Boring (incl. N/C)								
Units	416	185	45	16	31	9	4	6
Value	$ 21,253	$ 10,285	$ 3,292	$ 1,108	$ 3,267	$ 933	$ 538	$ 272
Boring, N/C								
Units	101	47	41	3	3	3	—	3
Value	$15,253	$ 7,657	$ 3,046	$ 870	$ 2,152	$ 755	—	$ 268
Drilling (incl, N/C)								
Units	6,287	158	42	110	20	62	62	48
Value	$10,519	$ 2,590	$ 468	$ 2,901	$ 1,350	$ 315	$ 451	$ 156
Drilling, N/C								
Units	2	—	—	—	—	—	1	—
Value	$ 146	—	—	—	—	—	$ 106	—
Gear Cutting & Finishing (incl. N/C)								
Units	105	16	—	44	6	5	2	20
Value	$10,289	$ 1,902	—	$ 5,611	$ 785	$ 1,104	$ 79	$ 5
Gear Cutting & Finishing, N/C								
Units	22	6	—	9	3	1	—	—
Value	$ 4,876	$ 1,482	—	$ 2,397	$ 537	$ 215	—	—
Grinding & Polishing (incl. N/C)								
Units	41,482	10,778	678	627	112	1,212	152	265
Value	~~$45,764~~	~~$ 14,661~~	$ 3,711	$ 8,627	$ 5,871	$ 3,198	$ 714	$ 1,438
Grinding & Polishing, N/C								
Units	1,091	42	3	12	17	5	1	3
Value	$13,065	$ 6,592	$ 405	$ 2,055	$ 1,873	$ 526	$ 268	$ 274
Lathes (incl. N/C)								
Units	2,464	378	640	170	107	74	21	54
Value	$90,061	$ 23,349	$34,437	$11,446	$ 4,590	$ 2,720	$ 570	$ 2,841
Lathes, N/C								
Units	1,130	231	622	95	17	19	4	26
Value	$74,915	$18,365	$33,956	$10,194	$ 2,454	$ 1,381	$ 185	$ 2,750
Milling (incl. N/C)								
Units	1,447	171	27	28	15	72	73	28
Value	$19,642	$ 5,847	$ 1,485	$ 646	$ 1,923	$ 1,631	$ 1,876	$ 172
Milling, N/C								
Unit	142	50	27	11	7	10	21	—
Value	$11,011	$ 4,021	$ 1,485	$ 528	$ 1,728	$ 856	$ 1,531	—
Other Metal Cutting								
Units	11,288	1,381	1,241	357	195	3,527	211	74
Value	$88,237	$20,892	$34,211	$ 9,529	$ 5,056	$ 6,375	$ 489	$ 1,543
Total Metal Forming								
Units	16,218	5,805	392	1,736	566	1,398	3,173	175
Value	$100,292	$28,155	$ 9,831	$11,201	$10,872	$10,812	$ 5,536	$ 4,472

Exchange Rate: 1 Pound = $1.2963.

Source: The Department of Trade and Industry.

SPANISH IMPORTS AND EXPORTS OF MACHINE TOOLS
By Type of Machine, Units and Value, 1983 to Date
(Thousands of U.S. Dollars)

Type of Machine	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
TOTAL IMPORTS	17,815	$86,244	13,057	$56,133	7,970	$58,895
Metal Cutting Total	11,774	62,989	10,163	36,631	6,112	37,265
Lathes	346	9,699	309	6,593	299	8,596
Boring Machines	80	701	404	992	53	1,634
Milling Machines	628	5,511	620	2,710	808	3,149
Planing Machines	99	48	2	2	1	14
Broaching Machines	11	482	11	152	3	66
Drilling Machines	537	1,071	776	970	370	1,013
Grinding & Polishing Machines	8,695	13,365	7,077	13,641	3,242	12,296
Gear Cutting Machines	52	7,969	17	2,848	59	438
Other Metal Cutting	1,326	24,143	947	8,723	1,277	10,059
Metal Forming Total	6,041	23,255	2,894	19,502	1,856	21,630
Presses	584	6,742	157	3,231	203	4709
Forging & Stamping Machines	252	1,255	14	379	24	1,700
Bending & Rolling Machines	392	2,891	356	2,799	351	2,889
Other Metal Forming	4,813	12,367	2,367	12,643	1,278	12,332
TOTAL EXPORTS	83,393	$99,427	75,481	$113,261	22,823	$151,452
Metal Cutting Total	21,591	68,981	32,883	85,164	13,953	116,693
Lathes	1,275	13,238	2,351	16,103	1,946	25,049
Boring Machines	75	5,446	123	5,108	171	7,645
Milling Machines	3,374	30,131	19,051	39,688	5,626	48,993
Planing Machines	14	684	41	163	—	—
Broaching Machines	—	—	6	33	10	147
Drilling Machines	1,151	4,626	2,241	5,432	2,085	8,411
Grinding & Polishing Machines	9,644	6,094	6,589	8,449	1,471	12,395
Gear Cutting Machines	6	80	8	150	16	290
Other Metal Cutting	6,052	8,682	2,473	10,038	2,628	13,763
Metal Forming Total	61,802	30,446	42,598	28,097	8,870	34,759
Presses	1,138	8,604	1,317	9,887	991	10,374
Forging & Stamping Machines	29	588	30	537	52	876
Bending & Rolling Machines	1,545	3,943	257	4,312	3,746	4,302
Other Metal Forming	59,090	17,311	40,994	13,361	4,081	19,207

Exchange Rate: 1983 $1 = 143.43 Pesetas; 1984 $1 = 160.76 Pesetas, 1985 $1 = 170.04 Pesetas.

Source: Asociacion Espanola de Fabricantes de Maquinas-Herramienta.

SPANISH IMPORTS AND EXPORTS OF MACHINE TOOLS

By Origin and Destination, 1983 to Date (a)

(Thousands of U.S. Dollars)

Country	Imports 1983	Imports 1984	Imports 1985	Exports 1983	Exports 1984	Exports 1985
GRAND TOTAL	$86,244	$56,133	$58,895	$99,427	$113,261	$151,452
Argentina	—	—	—	79	1,291	—
Australia	—	—	—	993	3,009	3,133
Austria	—	221	—	—	996	—
Belgium-Luxemburg	707	537	912	2,061	1,814	2,607
Canada	—	60	—	1,269	3,113	4,110
Cuba	—	—	—	1,288	1,855	7,205
East Germany	—	847	2,301	—	—	—
Ecuador	—	—	—	1,039	564	—
Finland	—	—	—	1,493	1,463	1,931
France	23,788	4,556	5,635	7,974	8,197	9,115
India	—	—	—	—	2,817	2,494
Italy	10,388	8,796	9,098	2,617	2,397	3,631
Japan	6,142	3,207	5,851	—	7	—
Mexico	—	—	—	6,677	4,126	9,762
Morocco	—	—	—	1,573	713	2,334
Netherlands	606	1,119	—	1,925	2,521	4,703
Portugal	—	—	—	1,958	3,238	4,540
South Africa	—	—	—	3,344	3,096	5,294
Sweden	1,034	2,186	2,052	2,151	3,118	4,248
Switzerland	3,188	6,036	4,497	1,335	1,566	1,858
United Kingdom	1,830	3,712	4,752	5,243	6,626	10,051
U.S.A.	2,171	4,007	4,165	8,644	15,981	19,105
Venezuela	—	—	—	3,664	3,919	4,442
West Germany	29,623	19,023	17,529	12,277	15,706	19,893
All Other	6,767	1,826	2,104	31,832	25,128	30,996

Exchange Rate: 1983 $1 = 143.43 Pesetas; 1984 $1 = 160.76 Pesetas; 1985 $1 = 170.04 Pesetas.

(a) Countries without data are included in "All Other."

Source: Asociacion Espanola de Fabricentes de Maquinas-Herramienta.

SPANISH MACHINE TOOL EMPLOYMENT AND CONSUMPTION

Employment in Thousands, Values in Thousands of Dollars

1973 to Date

Year	Shipments	Imports	Exports	Consumption	Employment
1973	$146,112	$ 89,359	$ 40,334	$195,137	12.1
1974	206,873	135,009	69,789	272,093	12.2
1975	223,117	168,693	86,532	305,277	11.6
1976	183,600	132,679	90,811	225,468	11.0
1977	190,872	91,373	102,529	179,716	10.5
1978	232,185	90,072	147,579	176,823	10.3
1979	315,829	91,322	210,766	196,385	10.0
1980	352,849	103,196	228,268	227,777	9.5
1981	319,957	142,038	207,038	254,957	8.8
1982	260,226	176,697	175,525	261,398	8.5
1983	188,245	86,244	99,427	175,063	7.6
1984	211,495	56,133	113,261	154,364	7.4
1985	252,881	58,895	151,452	160,324	7.3

Source: Asociacion Espanola de Fabricantes de Maquinas-Herramienta.

FRENCH PRODUCTION OF METAL CUTTING MACHINE TOOLS
By Type of Machine, Units and Value, 1983, to Date
(Values in Thousands of U.S. Dollars)

Type of Machine	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
Engine & Turret Lathes, NC	170	$ 16,929	323	$23,486	388	$27,207
Vertical Boring & Turning Mills, NC	42	15,774	(e)	(e)	(a)	(a)
Turning Centers, NC	113	11,555	110	10,494	102	5,826
Other Lathes, NC	168	16,648	183(e)	30,395(e)	(a)	(a)
Engine Lathes, non-NC	878	15,208	338	5,354	518	10,556
Copying, Multi-Tool & Semi-Automatic Turret Lathes, non-NC	(a)	(a)	28	1,127	(a)	(a)
Single-Spindle Automatic Lathes, non-NC	21	410	55(b)	1,224(b)	82	1,738
Other Lathes, non-NC	80	966	40	821	(a)	(a)
Comb. Boring & Milling Machines, NC	11	4,578	7	2,759	8	6,727
Comb. Boring & Milling Machines, non-NC	67	910	(a)	(a)	(a)	(a)
Boring Machines, NC	(a)	(a)	—	—	—	—
Boring Machines, non-NC	14	1,429	18	762	17	735
Milling Machines, NC	238	34,308	334	48,221	303	41,233
Knee-Type Milling Machines, non-NC	897	21,010	533	12,146	675	11,470
Bed-Type Milling Machines, non-NC	113	5,235	150	4,675	99	3,928
Other Milling Machines, non-NC	711	5,236	648	3,445	357	2,307
Drilling Machines, NC	(a)	(a)	(a)	(a)	(a)	(a)
Comb. Drilling & Boring Machines, NC	(a)	(a)	(a)	(a)	(a)	(a)
Radial Drilling Machines, non-NC	(a)	(a)	55	463	69	659
Bench Type Drilling Machines, non-NC	2,043	1,595	1,828	1,329	2,216	1,794
Pillar Type Driling Machines, non-NC	1,219	2,199	1,072	1,073	(a)	(a)
Column Type Drilling Machines, non-NC	44	1,528	37	1,028	17	117
Grinding Machines, NC	(a)	(a)	46	3,260	16	2,523
Universal Tool & Cutter Grinding Machines, non-NC	237	2,306	6,102	3,955	2,772	3,130
Single Point Cutting Tool Sharpening Machines, non-NC	(a)	(a)				
Cutter Sharpening Machines, non-NC	793	405				
Other Tool & Cutter Grinding Machines, non-NC	(a)	(a)				
Universal Cylindrical Grinding Machines, non-NC	21	971	14	304	21	608
Internal Cylindrical Grinding Machines, non-NC	63	4,769	183	6,344	350	11,011
External Cylindrical Grinding Machines, non-NC						
Surface Grinding Machines, non-NC	102	1,757				
Other Gridning Machines, non-NC	97	5,636				
Screw Cutting Machines, non-NC	476	2,185	(a)	(a)	(a)	(a)
Tapping Machines, non-NC	247	358	185	246	196	322
Planing Machines, non-NC	—	—	—	—	—	—
Slotting & Shaping Machines, non-NC	(a)	(a)	(a)	(a)	(a)	(a)
Surfacing Machines, non-NC	7,241	1,652	8,884	1,701	8,879	2,091
Polishing, Honing & Lapping Machines, non-NC	159	1,054	554	2,287	230	2,340
Broaching Machines, non-NC	—	—	(a)	(a)	(a)	(a)
Gear Cutting Machines, non-NC	(a)	(a)	(a)	(a)	—	—
Sawing & Cut-Off Machines, non-NC	857	3,663	829	1,996	895	2,724
Band Sawing Machines, non-NC	223	1,752	183	1,276	294	1,997
Other Sawing or Cut-Off Machines, non-NC	(a)	(a)	(a)	(a)	(a)	(a)
Spark Erosion Machines, non-NC	50	2,598	35	388	215	2,136
Transfer Lines	216	123,201	208	71,915	260	92,215
Unit Heads	332	722	438	1,325	642	3,950
Machining Centers	121	24,201	167	25,763	239	38,991
Other Metal Cutting Machines, NC	12	1,972	14	1,976	51	18,074
Other Metal Cutting Machines, non-NC	(a)	(a)	13,485	23,834	13,266	14,382
Total Metal Cutting, NC	1,059(c)	246,966(c)	1,283(d)	208,207(d)	1,365(f)	247,076(f)
TOTAL METAL CUTTING	30,723(c)	384,045(c)	38,682(d)	299,693(d)	36,690(f)	353,816(f)

NA - Not Available. Exchange Rate: 1983 $1 = 7.6213 Francs 1984 $1 = 8.7391 Francs 1985 $1 = 8.9852 Frances.

(a) Data withheld.
(b) Includes "Multi - Spindle Automatic Lathes, Non-NC."
(c) Does not include Surface Grinding Machines.
(d) Does not include "Spark Erosion Machines, NC."
(e) "Vertical Boring & Turning Mills, NC" are includes in "Other Lathes, NC."
(f) Does not include "Copying Lathes, NC."

Source: Syndicat des Constructeurs Francais de Machines-Outils

FRENCH PRODUCTION OF METAL FORMING MACHINE TOOLS
By Type of Machine, Units and Value, 1963, to Date
(Values in Thousands of U.S. Dollars)

Type of Machine	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
Sheet Metal Bending Machines, non-NC	212	$ 1,559	38	$ 643	147	$ 1,418
Sheet Metal Folding Machines, non-NC	966	1,652	470	954	874	1,443
Sheet Metal Straightening Machines, non-NC	316	1,299	(a)	(a)	(a)	(a)
Bar & Tube Drawing Machines, non-NC	(a)	(a)	(a)	(a)	(a)	(a)
Straightening Machines, non-NC	(a)	(a)	(a)	(a)	(a)	(a)
Profiling, Flanging & Molding Machines, non-NC	41	1,298	22	1,208	64	1,314
Other Bending Machines, non-NC	(a)	(a)	(a)	(a)	57	330
Punching, Shearing & Comb. Punching & Shearing Machines, NC	(a)	(a)	(a)	(a)	(a)	(a)
Mechanical Shearing Machines, non-NC	96	781	(a)	(a)	105	1,037
Hydraulic Shearing Machines, non-NC	546	9,231	447	6,588	701	10,343
Other Shearing Machines, non-NC	1,025	778	622	233	765	638
Punching Machines, non-NC	111	806	79	744	(a)	(a)
Comb. Punching & Shearing Machines, non-NC	64	752	(a)	(a)	(a)	(a)
Wireworking Machines, non-NC	58	3,924	83	2,295	108	4,932
Presses, NC	—	—	—	—	15	2,124
Open Front Mechanical Presses, non-NC:						
Less than 10 tonnes	(a)	(a)	349	1,791	370	2,290
10-16 tonnes						
16-25 tonnes						
25-40 tonnes						
40-63 tonnes						
63-80 tonnes						
80-100 tonnes						
100-125 tonnes						
125+ tonnes						
Single or Double Action, non-NC	(a)	(a)	(a)	(a)	(a)	(a)
Forging, Stamping & Percussion Presses, non-NC	(a)	(a)	(a)	(a)	(a)	(a)
Presses w/Automatic Feed, non-NC	—	—	(a)	(a)	(a)	(a)
Mechanical Press Brakes, non-NC	(a)	(a)	—	—	—	—
Hydraulic Press Brakes, non-NC	(a)	(a)	384	4,851	678	9,307
Drop & Air Hammers, non-NC	—	—	—	—	—	—
Open Front Hydraulic Presses, non-NC	115	4,615	128	2,918	134	2,193
Other Hydraulic Presses, non-NC	(a)	(a)	(a)	(a)	85	3,170
Other Metal Forming Machines, NC	(a)	(a)	(a)	(a)	(a)	(a)
Other Metal Forming Machines, non-NC	(a)	(a)	(a)	(a)	(a)	(a)
Total Metal Forming, NC	236	8,147	342	17,667	615	23,999
TOTAL METAL FORMING	6,590	80,470	5,064	76,960	6,399	90,921

NA - Not Available

Exchange Rate: 1983 $1 = 7.6213 Francs; 1984 $1 = 8.7391 Francs; 1985 $1 = 8.9852 Francs.

(a) Data withheld.

Source: Syndicat des Constructeurs Francais de Machines-Outils.

FRENCH PRODUCTION AND EXPORTS OF N/C MACHINES (a)
Units and Value, 1969 to Date
(Values in Millions of U.S. Dollars)

Year	Production		Exports	
	Units	Value	Units	Value
1969	154	$ 12.7	64	NA
1970	47	11.0	46	$ 3.9
1971	247	25.0	83	10.5
1972	230	27.8	61	5.6
1973	389	42.7	141	12.6
1974	535	51.0	261	22.3
1975	612	75.5	217	23.7
1976	576	80.4	165	26.6
1977	579	97.6	223	52.7
1978	867	163.3	391	104.0
1979	1,068	196.1	417	94.5
1980	1,238	189.2	370	85.2
1981	1,238	208.4	NA	NA
1982	1,246	192.4	NA	NA
1983	1,295(b)	255.1(b)	NA	NA
1984	1,625(c)	225.9(c)	NA	NA
1985	D	D	NA	NA

NA - Not Available. D - Withheld to avoid disclosure. r - Revised.

(a) The survey covered metalworking and woodworking manufacturers.
(b) Does not include Surface Grinding Machines.
(c) Does not include Spark Erosion Machines.

Source: Syndicat des Constructeurs Francais de Machines-Outils; Survey of 300 enterprises.

FRENCH MACHINE TOOL INDUSTRY
Selected Data, 1981 to Date
(Values in Millions of U.S. Dollars)

	1981	1982	1983	1984	1985
Employment	18,984	17,661	15,502	13,443	12,050
Production Workers	11,156	10,265	8,982	7,656	6,670
Others	7,818	7,396	6,520	5,787	5,380
Average Weekly Hours	40.2	38.6	37.8	38.0	38.8
Compensation	$ 271.3	$ 237.2	$ 197.0	$156.8	$149.8
Wages	131.3	112.2	90.1	72.0	65.3
Salaries	140.0	125.0	106.8	84.8	84.5
Orders(a)	$ 722.4	$ 587.7	$ 489.9	$474.0	$490.4
Domestic	438.2	410.8	320.1	315.7	301.9
Foreign	284.2	176.9	169.8	158.3	188.5
Shipments(a)	$ 809.5	$ 622.1	$ 560.1	$465.5	$499.3

Exchange Rates: 1981 $1 = 5.4346 Francs; 1982 $1 = 6.5724 Francs; 1983 $1 = 7.6213 Francs; 1984 $1 = 8.7391 Francs; 1985 $1 = 8.9852 Francs.

(a) Excluding Tax.

Note: Individual items may not add to totals due to rounding.

Source: Syndicat des Constructeurs Francais de Machines-Outils.

FRENCH EXPORTS OF MACHINE TOOLS

By Destination, Units and Value, 1983 to Date

(Values in Thousands of U.S. Dollars)

Destination	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
TOTAL	NA	$295,240	NA	$250,114	NA	$208,604
WESTERN EUROPE						
Austria	310	1,987	432	1,375	NA	1,706
Belgium-Luxembourg	4,066	7,284	4,631	6,594	NA	7,153
Finland	306	2,257	251	837	NA	NA
Greece	311	1,333	NA	NA	NA	NA
Italy	4,143	14,213	4,116	9,406	NA	8,780
Netherlands	1,939	1,804	1,870	3,003	NA	3,267
Norway	478	791	265	778	NA	1,365
Portugal	328	1,271	928	5,081	NA	1,341
Spain	1,444	20,557	2,549	5,048	NA	4,770
Sweden	855	3,693	1,344	2,492	NA	2,753
Switzerland	2,059	8,714	2,849	8,777	NA	9,116
Turkey	83	3,387	38	671	NA	4,419
United Kingdom	3,212	14,932	3,104	10,945	NA	12,655
West Germany	13,193	22,282	8,174	21,113	NA	27,280
EASTERN EUROPE						
Bulgaria	NA	NA	116	1,905	NA	1,305
Czechoslovakia	NA	NA	23	1,340	NA	1,348
East Germany	50	1,107	46	1,926	NA	9,618
Rumania	10	4,272	87	3,845	NA	2,010
U.S.S.R.	265	13,940	247	11,636	NA	10,793
Yugoslavia	651	3,975	328	8,331	NA	4,044
NORTH AMERICA						
Canada	1,039	3,421	1,270	7,531	NA	3,116
Mexico	196	69,947	234	35,546	NA	2,947
United States	2,372	17,082	6,124	23,427	NA	18,813
SOUTH AMERICA						
Argentina	NA	NA	45	1,160	NA	NA
ASIA						
India	52	1,689	108	3,396	NA	5,986
Indonesia	160	1,192	113	1,246	NA	2,709
Iraq	110	2,427	NA	NA	NA	2,334
Israel	331	2,508	183	3,881	NA	NA
Japan	529	1,213	641	1,364	NA	NA
People's Rep. of China	29	784	57	2,225	NA	4,314
Saudi Arabia	1,735	2,056	2,101	4,379	NA	NA
Singapore	NA	NA	667	1,234	NA	NA
OCEANIA						
Australia	617	1,003	734	1,895	NA	2,671
AFRICA						
Algeria	3,594	16,096	3,100	12,724	NA	13,200
Egypt	865	3,410	777	2,045	NA	1,626
Morocco	1,312	3,198	1,571	3,282	NA	3,191
Rep.of S. Africa	1,881	6,566	725	2,072	NA	NA
Tunisia	1,632	3,984	1,628	3,789	NA	2,108
OTHER	NA	30,865	NA	33,815	NA	31,866

NA - Not available; exports, if any, are included in "Other."

Exchange Rate: 1982 $1 = 6.5724 Francs; 1983 $1 = 7.6213 Francs; 1984 $1 = 8.7401, 1985 $1 = 8.9852 Francs.

Source: Syndicat des Constructeurs Francais de Machines-Outils.

FRENCH IMPORTS OF MACHINE TOOLS
By Origin, Units and Value, 1983 to Date
(Values in Thousands of U.S. Dollars)

Origin	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
TOTAL	194,456	$351,056	101,288	$301,173	NA	$357,549
WESTERN EUROPE						
Austria	1,365	3,788	1,390	1,274	NA	3,554
Belgium-Luxembourg	871	7,538	737	6,899	NA	9,786
Denmark	2,236	1,376	1,718	943	NA	762
Finland	118	245	105	427	NA	551
Ireland	3	70	115	543	NA	173
Italy	9,990	60,176	12,697	54,170	NA	64,820
Netherlands	8,070	2,997	1,461	3,003	NA	3,461
Norway	8	120	6	43	NA	91
Portugal	30	111	34	106	NA	186
Spain	1,108	8,598	1,089	8,287	NA	8,613
Sweden	1,434	5,510	1,439	2,813	NA	3,900
Switzerland	2,994	47,384	1,958	46,277	NA	51,370
United Kingdom	5,085	18,948	951	10,759	NA	14,405
West Germany	19,875	119,618	17,380	99,114	NA	111,240
EASTERN EUROPE						
Bulgaria	144	650	88	211	NA	776
Czechoslovakia	77	1,806	66	914	NA	555
East Germany	2,252	3,218	815	3,089	NA	2,917
Hungary	2	232	7	84	NA	408
Poland	1,810	1,662	40	358	NA	484
Rumania	1,625	1,059	1,874	1,125	NA	1,402
U.S.S.R.	266	2,061	209	1,052	NA	1,682
Yugoslavia	25	149	32	136	NA	73
NORTH AND SOUTH AMERICA						
Canada	26	387	45	113	NA	1,970
United States	1,172	17,918	1,471	14,251	NA	11,874
Brazil	NA	NA	2	157	NA	14
ASIA						
China	340	360	62	578	NA	170
India	6	35	7	47	NA	6
Israel	9	74	NA	NA	NA	216
Japan	2,703	36,320	1,015	35,963	NA	53,685
Taiwan	130,177	5,045	53,867	5,182	NA	4,964
OCEANIA						
Australia	1	2	NA	NA	NA	NA
OTHER	986	3,599	787	3,255	NA	3,441

NA - Not available; imports, if any, are included in "Other."

Exchange Rate: 1983 $1 = 7.6213 Francs; 1984 $1 = 8.7401 Francs; 1985 $1 = 8.9852 Francs.

Source: Syndicat des Constructeurs Francais de Machines-Outils.

FRENCH FOREIGN TRADE IN MACHINE TOOLS
By Type of Machine, Units and Value, 1983 to Date
(Values in Thousands of U.S. Dollars)

Type of Machine	1983		1984		1985	
	Units	Value	Units	Value	Units	Value
TOTAL IMPORTS	194,456	$351,056	101,288	$301,173	NA	$357,549
Metal Cutting Total (including N/C)	183,410	252,683	91,306	205,620	NA	$261,131
Boring Machines (including N/C)	204	14,663	456	11,887	NA	19,478
Boring Machines, N/C	51	9,364	319	6,215	NA	16,455
Drilling Machines (including N/C)	42,539	23,832	32,353	19,639	NA	13,548
Drilling Machines, N/C	120	11,031	167	11,543	NA	6,873
Gear Cutting	113	7,368	218	4,496	NA	3,485
Grinding & Polishing	130,304	48,906	45,781	38,277	NA	46,851
Lathes (including N/C)	3,176	64,417	3,538	58,113	NA	72,191
Lathes, N/C	653	41,115	656	41,908	NA	49,370
Milling Machines (including N/C)	1,431	37,417	1,372	27,827	NA	32,630
Milling Machines, N/C	302	21,808	311	17,396	NA	21,046
Other Metal Cutting	5,643	56,079	7,588	45,380	NA	72,949
Metal Forming Total	11,046	98,374	9,982	95,553	NA	96,417
Hydraulic Presses, non-NC	353	5,751	553	4,716	NA	2,837
Mechanical Presses, non-NC	1,249	20,271	961	19,574	NA	16,211
Presses, N/C	51	3,312	49	1,606	NA	3,313
Forging Machines	62	2,999	152	3,821	NA	4,254
Punching, Shearing, Bending and Forming Machines	5,928	37,358	5,004	38,756	NA	37,477
Wire Drawing Machines	186	7,925	256	6,035	NA	7,177
Other Metal Forming	3,217	20,757	3,007	21,043	NA	25,150
TOTAL EXPORTS	64,004	$295,240	60,674	$250,114	NA	$208,604
Metal Cutting Total (including N/C)	50,205	207,173	47,051	164,534	NA	125,456
Boring Machines (including N/C)	231	3,601	305	2,738	NA	3,105
Boring Machines, N/C	68	890	755	783	NA	949
Drilling Machines (including N/C)	12,494	15,277	8,436	8,620	NA	7,810
Drilling Machines, N/C	371	6,115	142	1,938	NA	1,080
Gear Cutting	90	4,113	97	1,090	NA	1,240
Grinding & Polishing	12,044	79,809	15,408	52,724	NA	26,767
Lathes (including N/C)	1,176	40,702	2,005	33,245	NA	34,983
Lathes, N/C	235	20,901	271	12,983	NA	11,940
Milling Mechines(including N/C)	2,560	36,030	2,862	44,849	NA	28,789
Milling Machines, N/C	152	17,543	273	28,020	NA	11,910
Other Metal Cutting	21,610	27,641	17,938	21,268	NA	22,761
Metal Forming Total	13,799	88,068	13,623	85,580	NA	83,148
Hydraulic Presses, non-NC	317	4,110	387	3,633	NA	2,825
Mechanical Presses, non-NC	983	13,190	1,730	11,376	NA	10,198
Presses, N/C	26	1,229	15	367	NA	802
Forging Machines	1,164	2,509	930	3,033	NA	1,132
Punching, Shearing, Bending and Forming Machines	4,600	29,197	4,812	27,663	NA	32,645
Wire Drawing Machines	112	3,200	116	6,329	NA	2,954
Other Metal Forming	6,597	34,632	5,633	33,179	NA	32,592

NA - Not Available.

Exchange Rate: 1983 $1 = 7.6213 Francs; 1984 $1 = 8.7401 Francs; 1985 $1 = 8,9852 Francs.

Note: Individual items may not add to totals due to rounding.

Source: Syndicat des Constructeurs Francais de Machines-Outils.

ITALIAN IMPORTS AND EXPORTS OF MACHINE TOOLS

By Origin and Destination 1982 to Date

(Thousands of U.S. Dollars)

Countries	1982	1983	1984	1985
TOTAL IMPORTS	$208,577	$181,788	$182,470	$196,449
West Germany	79,926	65,644	75,583	76,673
Switzerland	36,299	43,390	34,548	39,855
United States	20,037	15,275	13,546	12,412
Japan	5,693	7,374	8,765	11,627
France	12,274	15,012	8,594	8,432
United Kingdom	8,059	6,782	7,570	7699
Belgium – Luxemborg	3,475	2,304	5,122	3,928
East Germany	7,172	3,160	3,984	3,771
Sweden	7,172	4,411	3,870	9,794
Spain	6,137	2,963	3,187	3,352
Romania	1,405	132	2,960	1,309
U.S.S.R.	3,697	4,214	2,675	5,604
Czechoslovakia	2,292	1,975	1,992	2,200
Netherlands	1,405	922	2,106	4,190
Other Imports	11,534	8,230	7,172	5,603
TOTAL EXPORTS	$639,852	$603,437	$557,997	$707,395
West Germany	60,702	58,006	59,818	103,121
United States	42,586	39,110	57,826	94,113
France	89,464	92,771	54,013	64,628
U.S.S.R.	64,399	64,590	45,248	42,422
Turkey	10,499	24,361	28,002	35,351
United Kingdom	32,828	18,765	26,010	31,266
Switzerland	20,333	14,156	22,425	21,787
India	4,214	5,597	3,318	10,213
Venezuela	12,348	5,926	6,204	8,537
Bulgaria	2,366	1,844	5,009	8,537
Algeria	8,281	6,518	10,529	15,450
China	1,405	5,992	10,017	26,396
Sweden	13,974	9.284	9,789	12,517
Belgium – Luxemborg	8,577	11,061	9,676	13,355
Austria	6,950	8,362	8,879	9,532
Spain	19,667	10,732	8,253	10,527
Mexico	13,235	12,312	4,781	8,013
Poland	3,697	3,950	7,968	10,422
Finland	4,510	6,650	4,667	7,961
Canada	9,316	4,872	7,740	24,301
Other Exports	210,499	198,578	167,330	148,946

Exchange Rate: 1982 $1 = 1,352.5 Lire; 1983 $1 = 1,518.8 Lire; 1984 $1 = 1,757.0 Lire; 1985 $1 = 1,909.4 Lire.

Source: Unione Costruttori Italiani Macchine Utensili.

ITALIAN EXPORTS OF MACHINE TOOLS

1982 to Date

(Thousands of U.S. Dollars)

Machine Classifications	1982	1983	1984	1985
TOTAL	$639,852	$603,437	$557,997	$707,395
Lathes	78,740	81,634	54,963	75,305
Boring Machines	54,687	48,082	35,825	34,046
Milling Machines	57,389	54,592	47,575	92,515
Drilling Machines	38,447	45,335	23,563	27,954
Broaching Machines	3,431	7,328	1,028	6,424
Grinding Machines	45,450	52,388	47,271	58,431
Other Abrasive Machines	32,677	30,227	NA	NA
Gear Cutting Machines	3,026	3,737	2,337	2,213
Shaping–Sawing–Cutting off–slotting Machines	23,878	22,349	22,923	26,119
Presses	47,326	44,250	51,234	62,035
Shears and Punching Machines	27,351	23,688	21,306	25,652
Bending Machines	34,367	31,474	27,170	29,207
Forging Machines	3,839	5,213	4,892	10,281
All Others	189,276	153,140	217,910	257,213

NA – Not Available.

Exchange rates: 1982 $1 = 1,352.5 Lire; 1983 $1 = 1,518.8 Lire; 1984 $1 = 1,757.0 Lire; 1985 $1 = 1,909.4 Lire.

Note: Individual items may not add to totals due to rounding.

Source: Unione Costruttori Italiani Macchine Utensili.

ITALIAN IMPORTS OF MACHINE TOOLS

1982 to Date

(Thousands of U.S. Dollars)

Machine Classifications	1982	1983	1984	1985
TOTAL	$208,577	$181,788	$182,470	$196,449
Lathes	34,265	25,959	30,887	34,695
Boring Machines	11,326	16,522	7,294	7,950
Milling Machines	22,828	10,927	13,966	19,182
Drilling Machines	7,016	6,023	6,775	5,304
Grinding Machines	23,757	25,645	22,516	24,780
Other Abrasive Machines	11,056	10,546	NA	NA
Gear Cutting Machines	5,602	4,026	4,925	3,706
Shaping–Sawing–Cutting off–slotting Machines	7,903	5,698	6,506	7,846
Presses	18,902	13,434	12,178	11,099
Shears and Punching Machines	6,816	5,637	7,690	9,476
Bending Machines	7,531	5,094	4,929	6,313
Forging Machines	2,490	4,431	622	906
All Others	49,103	47,846	64,182	65,192

NA – Not Available.

Exchange rates: 1982 $1 = 1,352.5 Lire; 1983 $1 = 1,518.8 Lire; 1984 $1 = 1,757.0.; 1985 $1 = 1,909.4 Lire.

Note: Individual items may not add to totals due to rounding.

Source: Unione Costruttori Italiani Macchine Utensili.

ITALIAN PRODUCTION, IMPORTS AND EXPORTS OF MACHINE TOOLS

By Weight and Value, 1971 to Date

(Weights in Thousands of Metric Tonnes and Values in Millions of U.S. Dollars)

	Shipments		Imports		Exports	
Year	Weight	Value	Weight	Value	Weight	Value
1971	186.0	$ 516.2	45.9	$159.9	61.8	$186.0
1972	170.0	523.0	47.8	134.8	62.5	206.6
1973	162.0	620.9	55.6	187.0	57.2	236.4
1974	205.0	891.8	66.6	261.5	76.1	322.5
1975	160.0	842.5	45.0	212.9	75.7	432.1
1976	140.0	750.9	38.3	160.5	67.0	359.0
1977	146.5	878.3	39.6	192.9	76.5	442.4
1978	150.0	1,060.5	33.8	195.0	89.0	596.3
1979	160.0	1,354.0	36.7	255.9	91.4	689.0
1980	222.7	1,728.1	48.8	356.4	95.0	847.6
1981	NA	1,539.4	44.0	300.3	86.3	795.2
1982	NA	1,138.6	25.6	208.6	70.9	639.9
1983	NA	1,037.0	NA	181.8	NA	603.4
1984	NA	996.0	NA	182.5	NA	558.0
1985	NA	1,115.5	NA	196.4	NA	707.4

NA – Not Available.

Exchange Rate: 1971 $1 = 618.4 Lire; 1972 $1 = 583.2 Lire; 1973 $1 = 583.0 Lire; 1974 $1 = 650.3 Lire; 1975 $1 = 552.85 Lire; 1976 $1 = 832.29 Lire; 1977 $1 = 882.39 Lire; 1978 $1 = 848.66 Lire; 1980 $1 = 856.45 Lire; 1981 $1 = 1,136.77 Lire; 1982 $1 = 1,352.55 Lire; 1983 $1 = 1,518.8 Lire; 1984 $1 = 1,757.0; 1985 $1 = 1,909.4 Lire.

Source: Unione Costruttori Italiani Macchine Utensili.

SWEDISH PRODUCTION, IMPORTS, AND EXPORTS OF MACHINE TOOLS

Cutting & Forming, By Type of Machine, 1984 and 1985

(Thousands of U.S. Dollars)

	Production		Imports		Exports	
Machine Classification	1984(r)	1985E	1984	1985	1984	1985
GRAND TOTAL	$201,281	$221,411	$167,208	$201,596	$163,565	$184,834
Total Metal Cutting	85,514	100,536	93,320	118,221	72,519	78,911
Drilling Machines	9,445	10,693	7,648	7,063	8,156	8,741
Gear Cutting Machines	—	—	1,429	2,662	248	174
Grinding and Polishing	37,801	43,004	14,567	17,269	36,143	40,058
Lathes	20,757	27,313	19,773	30,350	14,536	17,714
Milling Machines	16,664	16,737	18,789	20,568	9,886	9,216
Broaching Machines	—	—	501	91	1,083	47
Planers and Shapers	—	—	64	1,329	34	234
Other Metal Cutting Machines	842	2,208	30,549	32,879	2,433	2,480
Total Metal Forming	56,552	62,762	34,528	38,778	52,372	60,525
Hammers	754	581	412	389	939	376
Presses inc. Forging Presses	13,250	16,853	4,673	9,825	18,457	24,610
Punching and Shearing Machines	8,831	11,623	11,340	11,894	9,555	12,755
Other Metal Forming Machines	33,717	33,706	18,103	16,670	23,421	22,784
Parts and Accessories	59,215	58,113	39,359	44,597	38,673	45,398

E – Estimate. r – Revised.

Exchange Rate: 1984 $1 = 8.2718 Kronor; 1985 $1 = 8.6039 Kronor.

Source: The Swedish Machine Tool Manufacturers' Association.

SWEDISH IMPORTS AND EXPORTS OF MACHINE TOOLS
By Country, 1983 to Date
(Thousands of U.S. Dollars)

Country	Imports			Exports		
	1983	1984	1985	1983	1984	1985
TOTAL	$129,578	$127,849	$157,000	$114,474	$124,891	$139,436
Europe	105,173	97,042	116,207	79,899	83,771	88,599
Austria	1,048	1,869	1,418	2,591	1,311	1,222
Belgium	1,017	1,271	1,332	810	1,005	458
Denmark	3,963	3,782	4,852	5,593	7,687	10,291
Finland	1,679	1,730	2,483	8,965	7,224	6,973
France	3,366	1,965	2,810	5,725	1,880	3,706
Italy	9,561	13,059	12,307	4,881	6,458	9,467
Netherlands	1,915	1,624	1,711	2,838	2,960	2,856
Norway	299	583	508	7,278	6,825	6,384
Portugal	—	—	23	346	39	97
Spain	2,214	3,478	4,663	910	1,521	1,759
Switzerland	9,005	9,654	11,840	1,666	1,696	2,344
United Kingdom	12,794	6,083	11,023	10,379	9,012	12,270
West Germany	53,895	47,442	56,103	12,373	18,128	17,192
East European Bloc	4,372	4,403	5,039	12,588	16,129	10,752
Czechslovakia	1,950	2,338	3,034	444	86	626
U.S.S.R.	395	472	643	10,563	11,650	5,670
Other East Bloc (a)	2,027	1,593	1,362	1,581	4,393	4,455
All Other Europe	45	98	95	2,957	1,897	2,827
United States	4,760	4,879	4,462	14,093	20,767	31,521
Canada	872	189	65	1,293	3,741	3,068
South & Central America	—	13	—	1,810	1,103	[illegible]175
Japan	17,202	23,276	34,269	2,506	1,321	1,901
All Other Asia	1,571	2,283	1,960	12,233	10,996	8,382
Africa	—	—	—	1,798	2,168	2,933
All Other	—	—	36	814	974	1,558

Exchange Rate: 1983 $1 = 7.6671 Kronor; 1984 $1 = 8.2718; 1985 $1 = 8.6039 Kronor.

(a) Includes Bulgaria, GDR, Hungary, Poland and Romania.

Note: Individual items may not add to totals due to rounding.

Source: The Swedish Machine Tool Manufacturers' Association.

NUMBER OF COMPANIES AND EMPLOYEES IN THE SWEDISH MACHINE TOOL INDUSTRY

	1980	1981	1982	1983	1984	1985
Number of Companies	40	38	36	36	35	36
Number of Employees	4,000	3,700	3,200	3,000	3,000	3,070

Source: The Swedish Machine Tool Manufacturers' Association.

SWISS EXPORTS AND IMPORTS OF MACHINE TOOLS

1983 to Date

(Thousands of U.S. Dollars)

Country	Exports 1983	Exports 1984	Exports 1985	Imports 1983	Imports 1984	Imports 1985
GRAND TOTAL	$670,890	$671,953	$836,352	$116,289	$130,409	$170,119
Argentina	661	796	NA	—	—	NA
Australia	2,818	4,575	NA	—	—	NA
Austria	11,403	10,801	NA	1,826	1,879	4,070
Belgium – Luxembourg	5,715	7,519	NA	939	571	1,221
Brazil	3,055	2,028	NA	1	—	NA
Bulgaria	24,275	19,085	19,535	109	128	NA
Canada	2,906	5,424	NA	14	47	NA
People's Rep. of China	23,779	14,568	26,454	18	—	NA
Czechoslovakia	11,712	12,036	17,907	570	502	NA
Denmark	2,940	5,758	NA	616	1,000	NA
East Germany	5,652	4,159	NA	535	407	NA
Finland	2,825	2,938	NA	97	131	NA
France	45,435	46,280	49,652	6,852	9,011	8,547
Hungary	3,932	2,222	NA	394	355	NA
India	15,020	13,970	NA	3	185	NA
Indonesia	1,926	3,748	NA	—	—	NA
Iraq	21,639	3,840	NA	—	—	NA
Israel	4,116	4,961	NA	—	56	NA
Italy	44,216	37,681	45,582	13,083	16,193	20,349
Japan	34,323	52,902	62,676	11,845	16,477	27,268
Mexico	1,560	3,666	NA	—	—	NA
Netherlands	9,566	12,676	NA	1,453	2,031	NA
Pakistan	1,606	2,016	NA	—	—	NA
Poland	8,110	7,003	NA	45	1,329	NA
South Africa	11,667	3,405	NA	20	—	NA
Spain	5,174	6,791	NA	1,594	1,703	2,035
Sweden	7,870	9,549	NA	2,073	1,141	2,035
Taiwan	6,625	7,918	NA	510	920	NA
United Kingdom	22,439	25,968	39,070	6,810	3,175	5,291
United States	61,397	93,240	123,316	1,489	1,912	5,291
U.S.S.R.	69,876	34,580	61,455	1,181	387	NA
West Germany	142,035	145,132	187,620	63,035	70,077	87,909
Yugoslavia	19,027	13,305	NA	32	7	NA
All Other	35,590	51,414	203,085	1,161	785	6,103

NA – Not Available.

Exchange Rate: 1983 $1 = 2.0991 Swiss Francs; 1984 $1 = 2.3497 Swiss Francs; 1985 $1 = 2.4571 Swiss Francs.

Note: Individual items may not add to totals due to rounding.

Source: Verein Schweizerischer Maschinen – Industrieller.

NETHERLANDS SALES OF MACHINE TOOLS AND PARTS
By Machine Types, 1979 to Date
(Thousands of U.S. Dollars)

Type of Machine	1979	1980(r)	1981(r)	1982(r)	1983(r)	1984(p)
GRAND TOTAL	$58,425	$67,904	$60,035	$50,558	$29,326	$34,406
Metal Cutting Machine Tools	25,224	29,123	25,970	22,545	12,894	17,827
Metal Forming Machine Tools	26,820	32,594	27,012	17,040	12,158	12,248
Hydraulic Presses	4,038	6,438	5,771	3,595	1,261	1,870
Mechanical Presses	4,287	6,388	5,931	4,382		
Bending, Forming, Straightening, Cutting & Edging	2,941	2,364	1,964	4,382	6,061	4,488
Other Metal Forming	15,553	17,404	13,346	9,288	4,835	5,890
Metal Cutting Parts & Accessories	2,692	3,370	3,326	3,221	4,275	4,332
Metal Forming Parts & Accessories	3,689	2,766	3,687	3,108		

p – Preliminary. r – Revised.

Exchange Rate: 1979 $1 = 2.006 Guilders; 1980 $1 = 1.9881 Guilders, 1981 $1 = 2.4952 Guilders; 1982 = 2.6702 Guilders; 1983 $1 = 2.8541 Guilders; 1984 $ 1 = 3.2087.

Note: Individual items may not add to totals due to rounding.

Source: Vereniging Van Metaal – Industrieen.

NETHERLANDS IMPORTS AND EXPORTS OF MACHINE TOOLS AND PARTS
By Type of Machine, 1982 to Date
(Thousands of U.S. Dollars)

Type of Machine	Imports			Exports		
	1982(r)	1983(r)	1984	1982(r)	1983	1984
TOTAL	$160,250	$127,010	$153,302	$101,303	$87,839	$81,653
Lathes	17,152	14,085	18,855	4,232	4,730	3,896
Milling Machines	28,650	21,128	27,363	14,381	8,619	11,500
Grinding, Honing and Polishing Machines	14,868	12,193	11,128	15,130	11,142	10,253
Hydraulic Presses	4,232	1,612	2,400	3,258	4,695	3,896
Other Presses	3,033	2,242	3,927	898	1,892	1,496
Bending, Forming, Straightening, Cutting and Edging Machines	17,751	14,015	22,688	24,043	21,338	18,045
Other Metalworking Machine Tools	21,796	18,360	28,178	7,752	7,393	7,698
Parts and Accessories	52,768	43,376	40,764	31,608	28,030	24,870

r – Revised.

Exchange Rates: 1982 = 2.6702 Guilders; 1983 $1 = 2.8541 Guilders; 1984 $ 1 = 3.2087.

Note: Individual items may not add to toals due to rounding.

Source: Vereniging Van Metaal – Industrieen.

CANADIAN IMPORTS AND EXPORTS OF MACHINE TOOLS AND PARTS
By Types of Machine, 1983 to Date
(Values in Thousands of U.S. Dollars)

Machine Classifications	1983		1984(r)		1985	
	Units	Value	Units	Value	Units	Value
TOTAL IMPORTS	NA	$270,738	NA	$358,565	NA	$458,218
Boring Machinery & Parts	142	15,167	172	12,696	289	14,511
Drilling Machinery & Parts	17,224	9,559	15,328	14,622	15,243	13,218
Grinding Machinery & Parts	114,131	22,313	90,032	33,021	88,758	38,072
Automatic Lathes	583	20,936	893	27,714	1,082	40,861
Turret Lathes, N.E.C.	520	1,724	423	1,064	599	1,739
Lathes & Parts, N.E.C.	938	11,323	1,159	14,489	1,850	19,060
Milling Machines & Parts	1,195	21,574	1,425	20,272	1,965	24,739
Shapers, Gear Makers & Parts	525	8,018	519	12,164	739	17,974
Transfer Machines & Parts	10	18,734	12	37,244	20	50,740
Sawing Machines & Parts	NA	10,400	NA	13,377	NA	15,750
Metalworking Presses & Parts	889	26,379	1,913	35,339	1,819	49,069
Rolls, Bending Machines & Parts	NA	7,774	NA	12,019	NA	13,159
Shearing Machines & Parts	175	2,260	510	3,471	454	4,071
Metal Forging Stamping Machines & Parts	97	5,342	167	8,080	119	6,523
Can Making Machinery & Parts	NA	34,478	NA	34,401	NA	39,870
Machine Tools & Parts, N.E.C.	NA	54,757	NA	78,592	NA	108,862
TOTAL EXPORTS (a)	NA	$55,562	NA	$119,358	NA	$104,854
Boring, Drilling Machinery & Parts	145	1,522	848	6,187	686	7,104
Grinding Machinery & Parts	240	3,743	352	2,502	188	2,527
Lathes & Parts	312	3,849	330	5,291	251	4,382
Metalworking Presses & Parts	185	7,963	180	7,202	198	5,463
Machine Tools & Parts, N.E.C.	NA	38,485	NA	98,176	NA	85,378

NA – Not Available. r – Revised. N.E.C. – Not Elsewhere Classfied.

(a) Domestic exports; does not include re-exports by Canada.

Exchange rate: 1983 $ 1 = 1.2324 Canadian dollars; 1984 $1 = 1.2951 Canadian dollars; 1985 $1 = 1.3655 Canadian dollars.

Source: Statistics Canada.

THE INDIAN MACHINE TOOL INDUSTRY
Production and Exports
(Values in Thousands of U.S. Dollars)

	Production						Exports	
	1983		1984		1985		1985	
Type of Machine	Unit	Value	Unit	Value	Unit	Value	Unit	Value
Total Machine Tools	9,925	$169,106	9,465	$164,333	9,284	$158,119	1,239	$22,184
Boring machines	110	13,099	98	11,272	86	9,904	2	249
Drilling machines	1,697	8,640	1,200	9,231	1,563	8,599	17	208
Milling machines	1,112	17,440	1,161	17,681	1,173	18,445	407	10,883
Gear cutting machines	73	4,131	28	2,573	45	2,018	4	299
Broaching machines	13	734	16	853	21	1,275	1	31
Lapping, honing, polishing machines	57	163	47	62	48	95	(a)	(a)
Automatic screw machines	562	14,496	555	15,798	663	15,674	59	3,431
Lathes	3,857	38,482	3,883	42,108	3,401	41,018	431	3,655
Grinding machines	981	14,314	783	13,462	888	13,404	213	2,951
Sawing machines	160	781	228	605	253	1,013	22	25
Shaping machines	182	2,330	160	3,287	145	2,093	1	31
Slotting machines	33	625	53	1,897	35	513	(a)	(a)
Screwing & threading	84	1,610	49	961	50	795	21	187
Presses	374	14,787	445	16,750	373	15,652	29	33
Shearing & sheet metal	313	5,882	187	5,660	172	5,190	1	14
Other	317	31,592	572	22,133	368	22,432	31	187

(a) Included in "Other."

Exchange Rate: 1983 $1 = 10.099; 1984 $1 = 11.363; 1985 $1 = 12.369.

Source: Indian Machine Tool Manufacturers' Association (IMTMA).

TAIWAN'S PRODUCTION, IMPORTS, EXPORTS AND CONSUMPTION OF MACHINE TOOLS
By Type of Machine, 1983
(Thousands of U.S. Dollars)

Machine Classification	Production	Imports	Exports	Consumption
GRAND TOTAL	$210,962	$112,987	$135,361	$188,588
Boring Machines	484	5,806	198	6,093
Drilling Machines	56,653	5,428	50,737	11,343
Milling Machines	36,001	10,891	18,395	28,497
Lathes	50,687	9.753	33,518	26,922
Gear-making Machines	437	3,205	76	3,566
Grinding Machines	14,179	7,980	7,326	14,834
Machining Centers	8,054	4,488	3,927	8,615
Sawing Machines	10,264	2,072	9,386	2,950
Presses	12,382	24,072	2,577	33,876
Planing Machines	2,658	467	.486	2,638
Other Machinery	19,163	38,825	8,735	49,253

Exchange Rate: $1 = 39.0 NT.

Source: World Trade Promotion Corp., Taiwan.

TAIWAN IMPORTS OF MACHINE TOOLS, 1983

By Type of Machine; Major Countries of Origin

(Values in Thousands of Dollars)

Type of Machine	Japan	France	West Germany	Switzerland	United States	World Total
GRAND TOTAL						
Units	4,504	25	115	73	138	5,246
Value	$71,248	$5,061	$12,923	$5,269	$5,794	$112,987
Boring Machines						
Units	57	—	4	8	—	79
Value	$ 2,868	—	$ 1,995	$ 400	—	$ 5,806
Drilling Machines						
Units	286	10	3	1	21	347
Value	$ 735	$ 7	$ 322	$1,392	$2,606	$ 5,428
Milling Machines						
Units	127	5	10	—	13	205
Value	$ 5,870	$ 395	$ 3,496	—	$ 245	$ 10,891
Lathes						
Units	357	—	26	12	11	461
Value	$ 6,451	—	$ 1,866	$ 503	$ 55	$ 9,753
Gear Grinding						
Units	39	—	9	—	—	56
Value	$ 2,023	--	$ 831	—	—	$ 3,205
Grinding Machines						
Units	146	—	19	18	13	249
Value	$ 4,306	—	$ 1,587	$ 484	$ 292	$ 7,980
Universal Machining Centers						
Units	36	—	—	1	2	39
Value	$ 3,590	—	—	$ 246	$ 652	$ 4,488
Sawing Machines						
Units	94	1	3	—	8	153
Value	$ 1,037	$ 5	$ 33	—	$ 902	$ 2,072
Presses						
Units	514	—	7	9	15	565
Value	$22,305	—	$ 289	$ 674	$ 434	$ 24,072
Planing Machines						
Units	7	—	1	—	—	14
Value	$ 432	—	$ 7	—	—	$ 467
All Other						
Units	2,841	9	33	24	55	3,078
Value	$21,634	$4,654	$ 2,497	$1,571	$ 609	$ 38,825

Exchange Rate: $1 = 39.0 NT.

Source: World Trade Promotion Corp., Taiwan.

TAIWAN EXPORTS OF MACHINE TOOLS, 1983

By Region

(Values in Thousands of Dollars)

Type of Machine	World Total	Asia	Europe	Africa	North America	All Other
GRAND TOTAL						
Units	718,798	23,606	127,312	16,281	504,686	46,913
Value	$135,361	$23,131	$17,862	$3,825	$80,145	$10,398
Boring Machines						
Units	8	5	—	—	3	—
Value	$ 198	$ 8	—	—	$ 190	—
Drilling Machines						
Units	626,960	18,069	119,628	13,462	436,081	41,720
Value	$ 50,737	$ 2,295	$10,764	$1,463	$32,245	$ 3,972
Milling Machines						
Units	6,236	712	203	35	4,985	301
Value	$ 18,395	$ 2,328	$ 588	$ 155	$14,528	$ 796
Lathes						
Units	12,561	2,120	1,360	378	6,750	1,953
Value	$ 33,518	$ 8,276	$ 3,095	$ 826	$17,474	$ 3,846
Gear Making						
Units	15	14	—	—	—	1
Value	$ 76	$ 73	—	—	—	$ 3
Grinding Machines						
Units	2,105	341	78	42	1,576	68
Value	$ 7,326	$ 1,288	$ 328	$ 245	$ 5,134	$ 331
Machining Centers						
Units	94	4	38	—	49	3
Value	$ 3,927	$ 141	$ 1,464	—	$ 2,272	$ 50
Sawing Machines						
Units	65,425	957	5,823	2,171	53,873	2,601
Value	$ 9,386	$ 452	$ 949	$ 402	$ 6,954	$ 629
Presses						
Units	217	168	—	11	33	5
Value	$ 2,577	$ 2,182	—	$ 245	$ 104	$ 45
Planing Machines						
Units	139	109	2	8	—	20
Value	$ 486	$ 378	$ 4	$ 24	—	$ 79
All Other						
Units	3,038	1,107	180	174	1,336	241
Value	$ 8,735	$ 5,707	$ 671	$ 465	$ 1,245	$ 647

Exchange Rate: $1 = 39.0 NT.

Source: World Trade Promotion Corp., Taiwan.

TAIWAN EXPORTS OF MACHINE TOOLS, 1983
By Country
(Values in Thousands of Dollars)

Type of Machine	United States	Australia	Canada	West Germany	United Kingdom	Japan
GRAND TOTAL						
Units	463,864	35,411	40,745	33,442	15,224	2,665
Value	$73,666	$6,801	$6,113	$4,365	$3,778	$3,413
Boring Machines						
Units	2	—	1	—	—	—
Value	$ 84	—	$ 106	—	—	—
Drilling Machines						
Units	399,957	31,373	36,115	31,665	11,433	1,951
Value	$29,482	$2,795	$2,752	$2,871	$1,232	$ 641
Milling Machines						
Units	4,767	174	213	26	104	81
Value	$13,753	$ 484	$ 758	$ 77	$ 229	$ 349
Lathes						
Units	5,978	1,578	734	409	192	418
Value	$15,805	$2,643	$1,541	$ 719	$1,058	$2,063
Gear Making						
Units	—	1	—	—	—	—
Value	—	$ 3	—	—	—	—
Grinding Machines						
Units	1,492	47	68	12	6	42
Value	$ 4,754	$ 241	$ 294	$ 116	$ 13	$ 165
Machining Centers						
Units	48	2	1	1	17	—
Value	$ 2,210	$ 39	$ 62	$ 132	$ 732	—
Sawing Machines						
Units	50,374	2,049	3,495	1,328	3,433	116
Value	$ 6,428	$ 456	$ 520	$ 205	$ 459	$ 28
Presses						
Units	30	1	3	—	—	—
Value	$ 102	$ 15	$ 3	—	—	—
Planing Machines						
Units	—	4	—	—	—	3
Value	—	$ 12	—	—	—	$ 22
All Other						
Units	1,216	182	115	1	39	54
Value	$ 1,048	$ 115	$ 78	$ 246	$ 56	$ 124

Exchange Rate: $1 = 39.0 NT.

Source: World Trade Promotion Corp., Taiwan.

KOREAN PRODUCTION OF MACHINE TOOLS

By Type, 1975 to 1984

(Millions of Dollars)

Machine Classifications	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984(p)
GRAND TOTAL	$11.0	$22.9	$52.8	$113.9	$113.9	$92.3	$99.0	$124.8	$167.9	$147.1
Metal Cutting Total	6.2	13.9	31.5	75.0	58.8	59.5	65.0	78.0	103.6	121.5
Lathes	5.0	9.7	23.4	57.8	36.9	41.0	35.0	32.0	37.6	45.5
NC Lathes	—	—	—	—	—	—	4.0	10.4	11.3	11.9
Milling	0.3	1.4	2.1	6.5	11.1	6.8	12.1	14.4	18.2	18.7
NC Milling	—	—	—	—	—	—	—	—	0.9	3.6
Drilling	—	0.5	3.4	4.8	4.9	2.7	3.8	2.8	5.1	5.9
Boring	—	—	0.1	1.2	1.6	1.3	2.4	3.1	1.9	2.6
Grinding	—	0.5	0.3	1.6	1.2	2.3	4.3	4.4	4.7	8.1
Electrical Discharge	—	—	—	—	—	—	—	1.3	1.0	2.9
Sawing	—	0.3	0.2	0.8	0.6	2.9	0.7	0.7	1.1	2.7
Gear Cutting	—	0.1	0.2	0.5	1.0	0.7	0.3	0.3	1.6	1.4
Tapping	—	—	—	—	—	0.2	0.2	0.1	0.5	0.6
Shaping	0.3	0.3	0.8	1.0	0.2	0.4	0.2	—	0.3	1.0
Planing	0.2	1.0	0.5	0.4	1.1	1.3	0.8	0.6	0.4	0.6
Special Purpose	—	—	—	—	—	—	—	1.7	4.5	3.3
Machining Centers	—	—	—	—	—	—	0.7	5.3	10.1	9.3
Other Metal Cutting	0.3	—	0.5	0.3	0.1	0.1	0.5	0.7	4.4	3.3
Metal Forming Total	4.7	8.9	21.3	39.0	55.1	32.7	34.0	46.8	64.3	25.6
Presses	4.0	5.4	12.5	24.2	46.7	17.5	19.0	31.7	39.1	14.7
Rolling Machines	0.4	0.8	2.7	5.4	3.7	5.6	1.2	4.2	8.3	2.0
Shearing	—	—	—	—	—	—	—	0.3	1.1	2.2
Wire Drawing	—	—	—	—	—	—	—	1.6	2.2	3.8
Bending	—	—	—	—	—	—	—	—	0.3	0.7
Other Metal Forming	0.3	2.7	6.1	9.4	4.8	9.7	13.8	9.1	13.2	2.2

p - Preliminary.

Individual items may not add to totals due to rounding.

Exchange rate: 1975-1979 $1 = 484.00 Won; 1980 $1 = 607.43 Won; 1981 $1 = 681.03 Won; 1982 $1 = 731.08 Won; 1983 $1 = 775.75 Won; 1984 $1 = 805.98 Won.

Source: Korea, Economic Planning Board and Korea Machine Tool Manufacturers' Association.

KOREAN EXPORTS OF MACHINE TOOLS
BY COUNTRY AND REGION, 1975 to 1984
(Thousands of Dollars)

Destination	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
TOTAL EXPORTS	$248	$396	$1,641	$4,137	$14,331	$22,989	$30,621	$34,920	$21,430	$21,569
North America										
U.S.A	43	11	183	1,851	6,088	8,543	14,701	17,944	8,514	8,105
Asia										
Japan	56	94	276	746	3,219	8,936	5,552	7,441	5,543	6,477
Indonesia	32	4	41	27	57	473	982	2,124	623	1,171
Malaysia	18	—	9	16	80	222	246	1,303	966	423
Singapore	17	36	88	—	38	317	203	131	239	98
Western Europe										
West Germany	7	—	—	—	61	660	983	286	43	602
United Kingdom	2	—	—	—	1,805	206	342	72	522	1,180
France	—	—	—	17	1	9	35	23	678	38
Netherlands	—	—	—	—	—	49	545	746	1,799	1,090
Oceania										
Australia	—	18	3	52	23	208	1,290	524	317	389
Middle East										
Saudi Arabia	22	130	224	356	802	669	1,067	1,144	416	128
Africa	—	3	92	458	1,320	688	1,412	676	407	683
All Other Countries	51	100	725	614	837	2,009	3,263	2,506	1,363	1,185

Source: Korea, The Office of Customs Administration.

KOREAN IMPORTS OF MACHINE TOOLS
BY COUNTRY AND REGION, 1975 to 1984
(Thousands of Dollars)

Origin	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
TOTAL IMPORTS	$85,154	$101,618	$152,678	$250,247	$310,841	$173,755	$130,270	$86,708	$139,750	$135,030
North America										
U.S.A.	5,291	11,341	9,458	14,973	29,683	19,546	30,576	13,435	10,507	9,901
Asia										
Japan	47,763	48,033	118,162	200,040	181,952	119,557	45,558	36,060	112,785	86,611
Taiwan	81	202	203	1,542	728	490	169	92	334	272
Singapore	—	—	—	—	—	7	54	69	37	803
Western Europe										
West Germany	17,624	5,857	13,966	18,302	53,236	18,180	31,395	27,384	7,083	24,505
United Kingdom	4,651	25,135	1,354	3,092	19,181	3,903	2,180	3,369	599	2,292
Italy	121	340	85	588	4,026	2,412	3,740	1,675	1,781	2,195
Switzerland	947	1,256	1,777	3,356	7,538	3,045	2,459	2,026	3,128	4, 423
France	7,794	7,340	300	4,951	9,302	2,249	6,655	674	1,087	66
Sweden	12	195	184	1,406	1,386	497	956	129	1,295	2,756
All Other Countries	870	1,919	7,189	1,997	3,809	3,869	6,528	1,795	1,114	1,206

Source: Korea, The Office of Customs Administration.

U.S.S.R. INDUSTRIAL PRODUCTION
For Selected Products and Industries, 1982 to 1984

	Unit of Measure	1982(r)	1983	1984
MACHINE TOOL INDUSTRY				
Metal Cutting Machines	Thousands	195	190	188
Metal Cutting Machines(a)	Mill. Rubles	2,068	2,200	2,385
Metal Cutting Machines, NC	Units	10,600	11,400	13,200
Presses—Forging Machines	Thousands	57	57	55
Presses—Forging Machines(a)	Mill. Rubles	621	657	666
OTHER SELECTED PRODUCTS ANO INDUSTRIES				
Electric Power	Bill. Kwh	1,367	1,418	1,493
Petroleum	Mill. Tons	613	616	613
Gas	Bill. Cu. Meters	501	536	587
Coal Incl. Coking Coal	Mill. Tons	718	716	712
Cast Iron	Mill. Tons	107	110	111
Steel	Mill. Tons	147	153	154
Rolled Ferrous Metal	Mill. Tons	117	122	123
Steel Pipe	Mill. Meters	2,590	2,711	2,738
Steel Pipe	Mill. Tons	18	19	19
Iron Ore	Mill. Tons	244	245	247
Instruments & Automation Equip. with Spare Parts(a)	Mill. Rubles	4,100	4,300	4,600
Computing Equip. with Spare Parts(a)	Mill. Rubles	3,000	3,300	3,600
Automobiles	Thousands	1,307	1,315	1,327

r - Revised.

(a) Data in wholesale prices.

Source: The U.S.S.R. in Figures for 1984 - U.S.S.R. Central Statistical Administration.

As the exchange rate of the ruble is controlled, value figures are given in rubles.

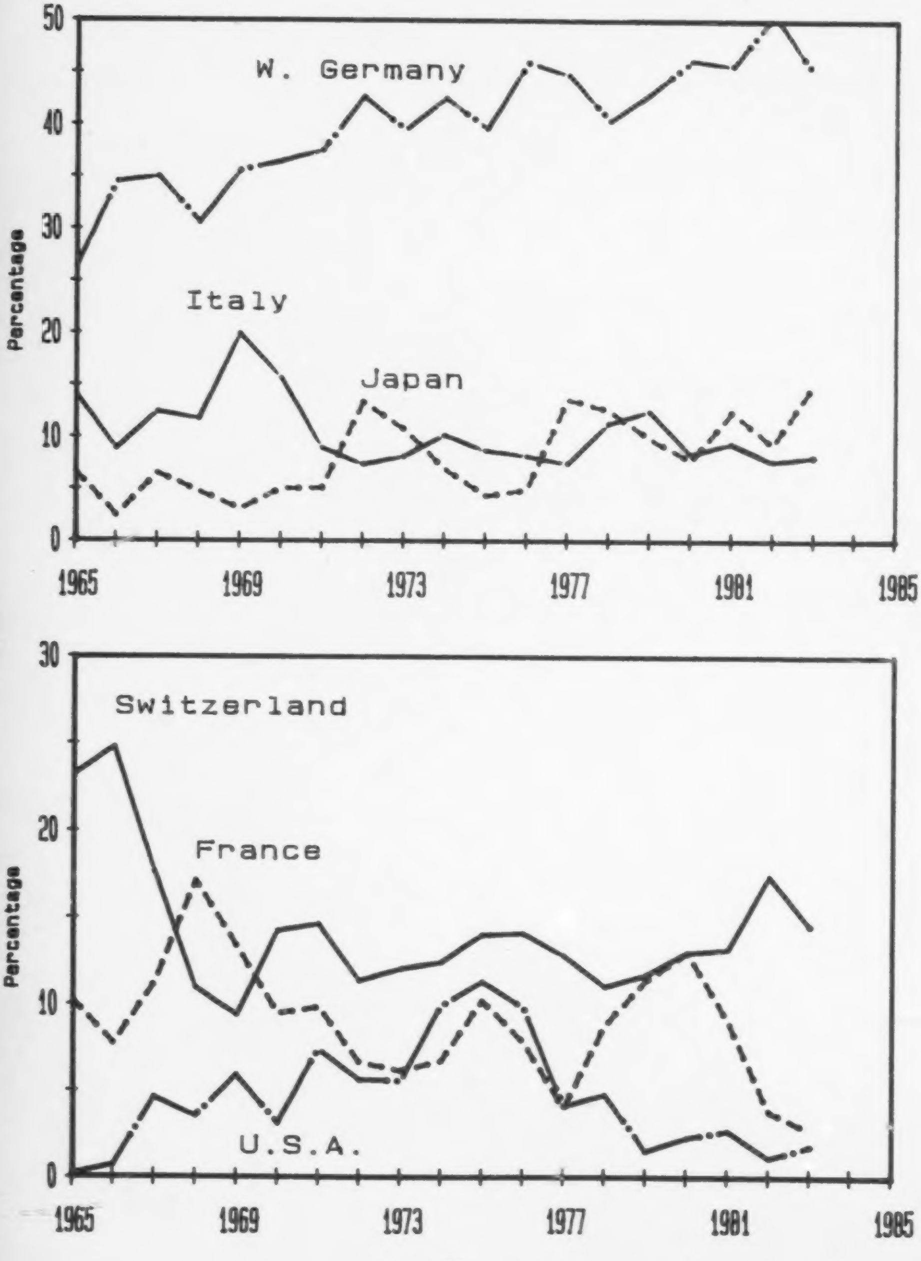
The official exchange rate: 1982 $1 = .726 rubles; 1983 $1 = .743 rubles; 1984 $1 = .816 rubles.

U.S.S.R. PRODUCTION OF MACHINE TOOLS
Units For Selected Years, 1937 to 1984

Year	Metal Cutting MachineTools	Forging Machines & Presses	Year	Metal Cutting MachineTools	Forging Machines & Presses
1937	48,500	3,125	1970	202,300	41,268
1940	58,400	4,668	1971	207,000	42,300
1945	38,400	2,871	1972	211,000	44,000
1950	70,600	7,684	1973	214,000	46,500
1955	117,100	17,117	1974	224,000	48,900
1960	155,900	29,933	1975	231,000	50,500
1961	165,000	30,520	1976	232,000	51,900
1962	176,800	33,434	1977	236,000	54,300
1963	182,700	34,221	1978	236,000	55,400
1964	184,400	34,497	1979	231,000	55,200
1965	186,100	34,637	1980	216,000	57,200
1966	192,200	38,412	1981	205,000	57,100
1967	197,000	41,126	1982	195,000	57,300
1968	200,600	42,128	1983	190,000	57,400
1969	205,300	42,658	1984	188,000	55,300

Source: The U.S.S.R. in Figures for 1984—U.S.S.R. Central Statistical Administration.

EAST BLOC MACHINE TOOL IMPORTS
From Six Non-Communist Nations



EASTERN BLOC (a) MACHINE TOOL IMPORTS
FROM 14 MAJOR NON-COMMUNIST TRADING NATIONS (b)
Total and Selected Nations, 1965 to 1983
(Values in Millions of U.S. Dollars)

		United States		France		West Germany		Italy		Japan		Switzerland	
Year	Total	Value	%(c)	Value	%(c)	Value	%(c)	Value	%(c)	Value	%(c)	Value	%(c)
1965	$ 60.9	$ .1	.2%	$ 6.2	10.2%	$ 16.0	26.3%	$ 8.5	14.0%	$ 4.0	6.6%	$ 14.1	23.2%
1966	71.3	.5	.7	5.5	7.7	24.6	34.5	6.3	8.8	1.7	2.4	17.7	24.8
1967	93.6	4.3	4.6	10.5	11.2	32.8	35.0	11.6	12.4	6.1	6.5	16.5	17.6
1968	162.7	5.7	3.5	27.9	17.1	49.6	30.5	19.1	11.7	7.6	4.7	17.8	10.9
1969	307.3	18.1	5.9	40.9	13.3	109.3	35.6	61.1	19.9	9.3	3.0	28.7	9.3
1970	257.9	8.0	3.1	24.2	9.4	94.2	36.5	40.3	15.6	12.8	5.0	36.5	14.2
1971	201.2	14.8	7.4	19.8	9.8	75.5	37.5	18.0	8.9	10.2	5.1	29.3	14.6
1972	385.5	21.5	5.6	25.4	6.6	164.3	42.6	28.3	7.3	51.2	13.3	43.6	11.3
1973	597.8	32.6	5.5	36.5	6.1	235.7	39.4	48.6	8.1	63.9	10.7	71.5	12.0
1974	727.4	72.2	9.9	48.6	6.7	309.2	42.5	74.2	10.2	50.4	6.9	89.9	12.4
1975	899.6	102.1	11.3	82.1	10.2	355.2	39.5	77.6	8.6	38.7	4.3	125.9	14.0
1976	976.8	63.8	9.8	76.6	7.8	447.9	45.9	79.6	8.1	48.3	4.9	138.0	14.1
1977	1,127.8	46.6(d)	4.1	45.6	4.0	504.6	44.7	83.7	7.4	153.7	13.6	144.9	12.8
1978	1,331.3	63.3(e)	4.8	116.7	8.8	536.8	40.3	150.0	11.3	165.9(f)	12.5	145.9	11.0
1979	1,243.8	18.5(d)	1.5	141.9	11.4	534.9	43.0	155.6	12.5	111.8	9.8	145.9	11.7
1980	998.4	23.4(e)	2.3	130.0	13.0	461.5	46.2	83.3	8.3	77.0	7.7	129.9	13.0
1981	719.9	19.6(e)	2.7	64.7	9.0	328.2	45.6	68.0	9.4	89.5	12.4	94.9	13.2
1982	667.9	7.1	1.1	25.2(i)	3.8	338.0	50.6	50.7	7.6	61.2(h)	9.2	116.0	17.4
1983	787.1	14.0(g)	1.8	21.0	2.7	352.7	44.8	63.7	8.1	118.7(i)	15.1	114.0	14.5

(a) Bulgaria, Czechoslovakia, E. Germany, Hungary, Poland, Rumania, and U.S.S.R.

(b) United States, Austria, Belgium-Luxembourg, Canada, Denmark, France, Federal Republic of Germany, Italy, Japan, Netherlands, Norway, Sweden, Switzerland, and United Kingdom.

(c) Percent of total Eastern Bloc machine tool imports from non-communist countries.

(d) Does not include Bulgarian imports.

(e) Does not include East German imports.

(f) Does not include Czechoslovakian imports.

(g) Does not include Hungarian imports.

(h) Does not include Polish imports.

(i) Does not include Romanian imports.

Source: U.S. Dept. of Commerce, "Market Share Reports," Commodity Series, Machine Tools For Working Metals; and NMTBA.

METAL CUTTING (a) MACHINE TOOL PRODUCTION (c)
U.S. and Selected Communist Countries
For selected years, 1960 to 1984

	1960	1970	1975	1978	1979	1980	1981	1982(r)	1983(r)	1984
United States (b)										
Million US $	$539.30	$1,097.70	$1,790.40	$2,139.00	$2,900.00	NA	NA	NA	NA	NA
Thousand units	42.91	49.31	64.32	58.12	76.07	61.37	72.01	49.10	35.40	35.45
Communist Countries										
USSR and Eastern Europe										
USSR										
Million US $	$611.74	$1,427.88	$2,179.78	$2,805.78	$2,959.87	NA	NA	NA	NA	NA
Thousand units	155.92	202.16	231.35	237.88	230.00	216.00	205.00	195.00	190.00(a)	188.00
Bulgaria (thousand units)	3.15	13.94	16.28	15.32	16.47	18.87	18.67	17.90	15.12	15.04
Czechoslovakia(thousand units)	30.23	35.19	29.66	34.25	35.66	36.90	34.70	37.10	35.40	33.70
East Germany (thousand units)	41.90	22.22	19.72	19.33	18.42	17.50	16.80	18.00	20.40	23.10
Hungary (thousand units)	9.78	14.48	12.83	12.69	12.06	10.20	10.90	13.10	12.80	12.54
Poland (thousand units)	22.47	29.73	33.19	30.00	30.86	28.20	30.50	32.20	37.40	37.80
Romania (thousand units)	4.44	14.14	28.27	27.55	27.19	29.40	36.70	36.70	59.00	63.00
China (thousand units)	NA	140.00	175.00	180.00	140.00	134.00	103.00	103.00	118.00	131.40

NA - Not Available. r – Revised.

(a) Power – driven metalcutting machines that are not portable by hand and are used to remove metal in the form of chips; these machines include lathes and planers and milling, honing, lapping, grinding, electroerosion, and ultrasonic cutting machines.

(b) Average value of $1,000 and over for 1960 – 77 and beginning in 1978, $2,500 and over.

(c) The data above are only available through the C.I.A. whose sources are confidential.

Source: C.I.A. "Handbook of Economic Statistics, 1985".

METAL FORMING MACHINE TOOL (a) PRODUCTION (c)
U.S. and U.S.S.R.
For selected years, 1960 to 1984

	1960	1970	1975	1978	1979	1980	1981	1982	1983(r)	1984
United States										
Million US$	$238.4	$454.1	$ 615.7	$784.7	$990.3	NA	NA	NA	NA	NA
Thousand units(b)	19.3	24.2	26.8	29.5	31.4	30.3	21.7	18.3	31.5	34.1
USSR										
Million US$	$188.3	$359.2	$ 581.1	$776.7	$828.6	NA	NA	NA	NA	NA
Thousand units	29.9	41.3	50.5	55.4	56.3	57.2	57.1	57.3	57.4	55.3

NA – Not Available. r – Revised.

(a) Power – driven metalforming machine tools that are not supported in the hands of an operator when in use and are designed to press, forge, emboss, hammer, extrude, blank, spin, shear, and bend metal into shape.

(b) Average value of $1,000 and over for 1960 – 77 and beginning in 1978, $2,500 and over.

(c) The data above are only available through the C.I.A. whose sources are confidential.

Source: C.I.A. "Handbook of Economic Statistics, 1985."

COMMUNIST COUNTRIES' EXPORTS OF MACHINERY (a)

1973 to 1977

(Millions of U.S. Dollars)

Exporting Country	Total(b)	Exported to					
		Communist Countries (c)	Free Europe (Incl. Yugosl.)	U.S., Canada, Japan	Africa (Excl. S. Afr.)	Asia (d)	Latin America (e)
TOTAL							
1973	$ 9,143	$ 6,917	$638	$48	$298	$ 867	$284
1974	10,606	8,228	759	71	319	986	88
1975	12,401	9,323	929	80	341	1,067	117
1976	14,050	11,130	580	40	218	587	97
1977	15,605	12,726	665	45	250	785	110
U.S.S.R.							
1973	2,718	1,541	245	3	170	491	182
1974	3,357	2,249	232	10	154	555	11
1975	3,553	2,051	252	17	136	540	22
1976	3,953	2,952	127	3	96	303	23
1977	4,759	3,538	153	3	115	28	
East Germany							
1973	2,254	1,959	123	11	45	78	37
1974	2,507	2,181	152	12	42	92	26
1975	2,972	2,615	169	9	36	114	24
1976	3,458	2,957	135	4	50	104	25
1977	3,833	3,328	150	5	54	104	27
Czechoslovakia							
1973	1,774	1,404	128	16	54	134	35
1974	1,973	1,511	169	22	81	153	32
1975	2,303	1,776	195	20	106	162	41
1976	2,700	2,032	130	8	38	113	28
1977	2,972	2,237	143	9	41	124	32
Poland							
1973	578	438	68	9	10	48	5
1974	641	454	96	17	9	54	10
1975	836	576	145	19	14	63	19
1976	1,124	855	91	12	12	54	13
1977	1,335	1,015	109	14	14	64	15
Hungary							
1973	587	514	22	1	3	41	6
1974	689	597	35	1	3	49	5
1975	910	749	74	1	5	77	4
1976	895	752	33	1	3	31	5
1977	1,055	886	38	1	3	37	6
Romania							
1973	388	269	34	7	11	59	8
1974	437	293	49	8	22	61	3
1975	561	372	58	13	30	83	4
1976	440	215	37	13	15	58	2
1977	495	242	42	14	16	65	2
Bulgaria							
1973	844	792	18	1	5	16	11
1974	1,002	943	26	1	8	22	1
1975	1,266	1,185	36	1	13	30	1
1976	1,481	1,358	27	1	6	23	1
1977	1,615	1,480	30	1	6	26	1

(a) Note that these figures are for machinery in general and not for machine tools only.

(b) Total includes Australia, New Zealand, South Africa and not specified.

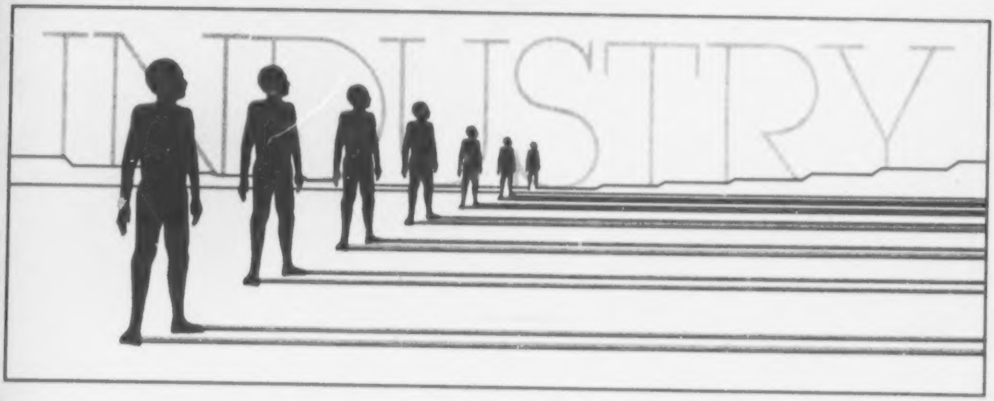
(c) U.S.S.R., East Germany, Czechoslovakia, Poland, Hungary, Romania, Bulgaria, Albania; beginning with 1974 includes Cuba and Outer Mongolia.

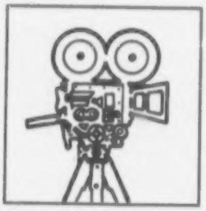
(d) Excluding Japan; beginning with 1974 excludes Outer Mongolia.

(e) Beginning with 1974 excludes Cuba.

Source: Verein Deutscher Maschinenbau – Anstalten, VDMA, "Statistisches Handbuch fur den Maschinenbau" (annually).

The future of industry depends on new employees





Put NMTBA's new career recruitment film to work for you. "Machine Tool Careers" is available *free of charge* for use in your company's personnel development efforts, as well as in local high schools and vocational schools. The informative 25-minute film is also available in video cassette.

This colorful film shows young, successful metalworking industry employees—operators, programmers, assembly technicians, service engineers and supervisors—describing their work, their career progress and their life styles. In addition, the motion picture covers what machine tools are and their importance to our nation's industrial achievements.

Collateral handout materials to reinforce the film's message are also available free of charge. To arrange for free loan of the career information film, contact Modern Talking Picture Service, Inc., Scheduling Center, 5000 Park Street North, St. Petersburg, Florida 33709.

nm ba national machine tool builders' association

"Machine Tool Careers"—*an investment in the future.*

7

EMPLOYMENT AND EARNINGS

If all the employees of the U.S. machine tool industry were to work for a single company, it would rank only about 4lst among U.S. industrial corporations in total employment. Clearly, relative to total U.S. Industry, the machine tool industry is small. These employment statistics demonstrate that the industry is characterized by a substantial number of small and medium-sized establishments.

Historically, industry employment has fluctuated sharply with changes in new orders and shipments. Evidence of this is provided not only by the employment statistics but also by the labor turnover data in this chapter. These fluctuations create serious problems for the industry and for its employees. If employment has to be cut drastically, some of the highly skilled labor force is lost. Conversely, when business experiences a quick upturn, there is a shortage of skilled workers. Extensive overtime is characteristic of the industry when orders are high.

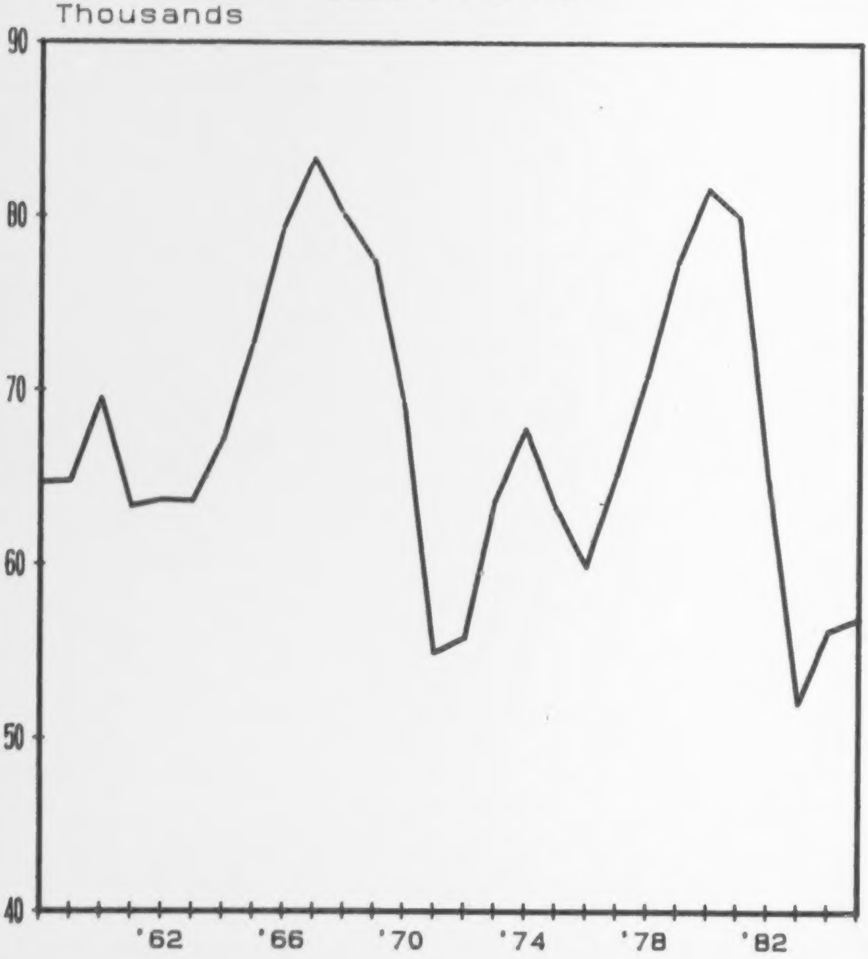
To fill the gap in skilled workers, the industry sponsors training programs and NMTBA's Training Director assists Association members in solving a variety of manpower problems. However, the work force is getting older and it is becoming increasingly difficult to maintain a core of skilled workers.

Wages in the industry are competitive with those in comparable industries. Average hourly earnings for production workers in the metal cutting machine tool segment were $10.60 in 1985. Average earnings in the metal forming sector of the industry were $10.93. The average weekly hours worked in the industry were 42.6 for the metal cutting tool builders' employees, and 41.9 for the metal forming machine tool builder's employees.

Work injury rates in metal cutting machine tool establishments are substantially lower, in lost workday cases, than the average for all manufacturing industries. The NMTBA Safety Director works closely with government agencies, industry members, and major industry customers to solve problems affecting safety and health.

Total compensation in the metal and metalworking industries in other countries has grown more rapidly than in the U.S. and in some cases is approaching equivalence. When the focus is narrowed to machine tools only, the total compensation of workers in the U.S. machine tool industry is by far the highest among the major machine tool producing nations.

Most of the data in this chapter comes from the U.S. Department of Labor's Bureau of Labor Statistics, primarily from their monthly "Employment and Earnings" tabulation. Some of the data is obtained from the Bureau of the Census, primarily its annual "Survey of Manufactures" series. The Census data may be more complete because it is based on the enumeration of all workers in SIC identified industries that is obtained in the "Census of Manufactures." However, as the Census comes out only every five years and the "Survey of Manufacturers" is annual, the data from the BLS offers much more timely information with only a marginal loss of accuracy. For further explanation of the terms used in this chapter, see the Glossary at the end of this book.



Employment in the Metal Cutting Machine Tool Industry
1959 to Date

EMPLOYMENT IN THE MACHINE TOOL INDUSTRY

1958 to Date

(Average Annual Employment in Thousands)

	All Employees		Production Workers		Female Employees	
Year	Metal Cutting	Metal Forming	Metal Cutting	Metal Forming	Metal Cutting	Metal Forming
1958	64.7	NA	43.8	NA	6.3	NA
1959	64.8	NA	44.3	NA	6.0	NA
1960	69.5	NA	48.2	NA	6.5	NA
1961	63.3	NA	42.8	NA	5.9	NA
1962	63.7	NA	43.7	NA	5.8	NA
1963	63.6	NA	44.0	NA	5.7	NA
1964	67.1	NA	46.7	NA	5.8	NA
1965	72.8	NA	50.8	NA	6.2	NA
1966	79.4	NA	55.7	NA	7.1	NA
1967	83.3	NA	57.9	NA	7.9	NA
1968	80.0	NA	54.5	NA	7.6	NA
1969	77.4	NA	52.2	NA	7.4	NA
1970	69.2	NA	45.5	NA	6.8	NA
1971	54.9	NA	34.9	NA	5.4	NA
1972	55.8	NA	35.8	NA	5.5	NA
1973	63.7	NA	42.6	NA	6.4	NA
1974	67.8	NA	45.6	NA	7.1	NA
1975	63.3	NA	41.8	NA	6.5	NA
1976	59.9	NA	38.8	NA	6.4	NA
1977	65.2	23.3	41.9	15.4	7.3	NA
1978	70.9	25.0	45.9	16.5	8.4	NA
1979	77.4	26.9	51.2	17.7	9.7	NA
1980	81.6	26.4	54.7	17.0	10.6	NA
1981	80.0	24.4	52.0	15.3	10.7	NA
1982	64.9	21.0	39.3	12.6	8.8	2.2
1983	52.0	17.1	29.9	9.9	7.3	1.7
1984(r)	56.2	19.0	34.2	11.7	8.0	1.9
1985(p)	56.9	19.6	35.8	12.0	8.2	2.0

r - Revised. p - Preliminary. NA - Not Available.

Note: The figures published by the Bureau of Labor Statistics are based on monthly sample surveys and differ from the figures shown by the Census.

Source: U.S. Bureau of Labor Statistics, "Employment and Earnings Statistics, 1909-85."

EMPLOYMENT AND AVERAGE WEEKLY HOURS OF PRODUCTION WORKERS
Machine Tool Industry
Monthly, 1983 to Date

	Number of Production Workers (Employment in Thousands)			Average Weekly Hours		
Month	1983	1984	1985	1983	1984	1985
Metal Cutting						
Jan.	31.3	31.4	36.0	37.9	41.6	42.8
Feb.	30.8	32.3	35.9	37.3	42.3	42.2
Mar.	29.5	32.8	36.0	38.1	42.0	42.5
Apr.	29.1	33.2	35.3	38.5	42.4	42.0
May	29.1	33.5	36.2	37.9	42.3	42.2
June	29.3	34.1	35.9	38.1	42.3	42.5
July	28.7	34.8	35.4	38.8	42.2	42.3
Aug.	29.0	34.3	35.5	38.2	42.4	42.5
Sept.	29.9	35.3	36.0	39.7	42.6	42.5
Oct.	30.0	35.7	35.5	40.1	42.6	42.6
Nov.	30.9	36.0	35.6	41.1	42.8	42.2
Dec.	31.3	36.2	35.7	42.3	43.6	45.2
Yearly Avg.	29.9	34.1	35.8	39.0	42.4	42.6
Metal Forming						
Jan.	9.8	10.7	12.3	38.7	42.1	41.4
Feb.	9.5	10.9	12.4	37.9	42.8	40.7
Mar	9.6	11.1	12.3	38.6	42.8	42.3
Apr.	9.6	11.2	12.1	38.5	42.0	41.8
May	9.9	11.4	12.1	37.1	41.5	41.4
June	9.7	11.5	12.1	36.7	42.5	42.0
July	9.7	11.4	12.0	37.7	41.7	41.3
Aug.	9.7	11.6	11.7	37.6	41.9	41.0
Sept.	10.1	12.0	11.8	38.4	42.3	42.7
Oct.	10.3	12.1	11.5	39.7	42.6	42.2
Nov.	10.6	12.3	11.8	40.2	42.8	42.8
Dec.	10.6	12.4	11.8	41.2	43.9	43.5
Yearly Avg.	9.9	11.6	12.0	38.6	42.4	41.9
Total Machine Tools Yearly Avg.	39.8	45.7	47.8	38.9	42.4	42.3

Source: U.S. Bureau of Labor Statistics, "Employment and Earnings Statistics."

HOURS AND GROSS EARNINGS OF PRODUCTION WORKERS
Metalworking and Metal Cutting Industries, 1939 to Date

	Metalworking Machinery Industry			Metal Cutting Machine Tool Industry		
Year	Average Weekly Earnings	Average Weekly Hours	Average Hourly Earnings	Average Weekly Earnings	Average Weekly Hours	Average Hourly Earnings
1939	NA	NA	NA	$ 32.34	42.5	$ .76
1940	NA	NA	NA	37.44	48.0	.78
1941	NA	NA	NA	44.22	51.6	.86
1942	NA	NA	NA	52.70	53.5	.99
1943	NA	NA	NA	55.11	50.7	1.09
1944	NA	NA	NA	58.19	50.6	1.15
1945	NA	NA	NA	57.14	47.9	1.19
1946	NA	NA	NA	54.40	42.8	1.27
1947	$ 58.69	42.5	$ 1.38	57.87	42.3	1.37
1948	63.13	42.4	1.49	61.68	42.1	1.47
1949	61.33	39.8	1.54	59.23	39.2	1.51
1950	71.73	43.5	1.65	69.87	43.1	1.62
1951	86.01	47.4	1.83	85.14	47.3	1.80
1952	92.20	46.8	1.97	90.24	47.0	1.92
1953	96.81	46.1	2.10	95.17	46.2	2.06
1954	93.09	42.9	2.17	89.25	42.5	2.10
1955	98.34	43.9	2.24	95.48	43.6	2.19
1956	108.96	45.4	2.40	106.25	45.6	2.33
1957	106.89	43.1	2.48	101.04	42.1	2.40
1958	102.00	40.0	2.55	91.20	38.0	2.40
1959	113.74	42.6	2.67	106.93	42.1	2.54
1960	117.27	42.8	2.74	110.99	42.2	2.63
1961	117.04	41.8	2.80	111.92	41.3	2.71
1962	125.57	43.3	2.90	119.41	42.8	2.79
1963	128.90	43.4	2.97	124.42	43.2	2.88
1964	137.06	44.5	3.08	132.01	44.3	2.98
1965	144.37	45.4	3.18	138.76	45.2	3.07
1966	153.72	46.3	3.32	150.20	46.5	3.23
1967	154.56	44.8	3.45	154.25	45.5	3.39
1968	158.70	43.6	3.64	152.65	43.0	3.55
1969	172.38	44.2	3.90	166.61	43.5	3.83
1970	174.28	42.3	4.12	166.00	41.5	4.00
1971	174.62	40.8	4.28	163.90	39.4	4.16
1972	198.29	43.2	4.59	194.71	42.7	4.56
1973	214.90	44.4	4.84	219.11	44.9	4.88
1974	225.33	43.5	5.18	232.74	44.5	5.23
1975	226.46	41.1	5.51	232.68	42.0	5.54
1976	248.89	41.9	5.94	249.96	41.8	5.98
1977	279.72	43.1	6.49	290.18	43.9	6.61
1978	308.88	44.0	7.02	322.56	44.8	7.20
1979	329.30	43.5	7.57	344.21	44.3	7.77
1980	346.83	42.4	8.18	366.21	43.7	8.38
1981	371.90	41.6	8.94	383.95	42.1	9.12
1982	380.09	39.8	9.55	380.44	38.9	9.78
1983	399.67	40.7	9.82	386.49	39.0	9.91
1984	435.86	42.9	10.16	432.48	42.4	10.20
1985	448.80	42.5	10.56	451.56	42.6	10.60

NA - Not Available.

Note: Earnings figures include overtime and premium pay.

Source: U.S. Bureau of Labor Statistics, "Employment and Earnings Statistics, 1909-85."

AVERAGE WEEKLY EARNINGS OF PRODUCTION WORKERS

Selected Industry Groups, 1939 to Date, Annual Averages

Year	Durable Goods Industries	Nonelectrical Machinery Industry	Motor Vehicles & Equipment Industry	Aircraft and Parts Industry	Metal Working Machinery Industry	Metal Cutting Machinery Industry
1939	$ 26.19	NA	$ 33.58	NA	NA	$ 32.34
1940	28.07	NA	36.69	NA	NA	37.44
1941	33.56	NA	42.68	NA	NA	44.22
1942	42.17	NA	54.15	NA	NA	52.70
1943	48.73	NA	59.13	NA	NA	55.11
1944	51.38	NA	60.12	NA	NA	58.19
1945	48.36	NA	55.28	NA	NA	57.14
1946	46.22	NA	52.28	NA	NA	54.40
1947	51.76	$ 57.58	58.63	$ 54.74	$ 58.69	57.87
1948	56.36	60.38	63.15	60.97	63.13	61.68
1949	57.25	60.31	67.33	63.34	61.33	59.23
1950	62.43	67.08	74.85	68.10	71.73	69.87
1951	68.48	76.13	77.16	77.96	86.01	85.14
1952	72.63	79.55	84.87	81.27	92.20	90.24
1953	76.63	82.68	89.88	83.38	96.81	95.17
1954	76.19	81.40	91.30	84.66	93.09	89.25
1955	82.19	87.36	99.84	89.21	98.34	95.48
1956	85.28	93.06	96.82	95.57	108.96	106.25
1957	88.26	94.12	100.61	96.35	106.89	101.04
1958	89.27	94.33	101.24	101.25	102.00	91.20
1959	96.05	102.92	111.38	106.63	113.74	106.93
1960	97.44	104.55	115.21	110.43	117.27	110.99
1961	100.35	107.42	114.65	114.68	117.04	111.92
1962	104.70	113.01	127.67	119.97	125.57	119.41
1963	108.09	116.20	132.68	122.43	128.90	124.42
1964	112.19	121.69	138.03	125.03	137.06	132.01
1965	117.18	127.58	147.63	131.88	144.37	138.76
1966	122.09	135.34	147.23	143.32	153.72	150.20
1967	123.60	135.89	144.84	146.97	154.56	154.25
1968	132.07	141.88	167.66	152.04	158.70	152.65
1969	139.59	152.15	170.56	161.35	172.38	166.61
1970	143.47	154.95	170.47	168.92	174.28	166.00
1971	153.52	161.99	195.29	175.82	174.62	163.90
1972	167.27	179.34	219.22	193.44	198.29	194.71
1973	179.28	193.83	237.08	207.50	214.90	219.11
1974	190.48	207.62	239.54	218.70	225.33	232.74
1975	205.09	219.22	262.68	246.19	226.46	232.68
1976	225.33	236.74	305.30	263.16	248.89	249.96
1977	248.46	259.79	345.40	289.95	279.72	290.18
1978	270.44	285.44	368.05	318.19	308.88	322.56
1979	290.90	305.98	372.37	351.05	329.30	344.21
1980	310.78	328.00	394.00	389.76	346.83	366.21
1981	343.31	360.33	450.72	425.80	371.90	383.95
1982	355.27	367.62	470.61	461.55	380.09	380.44
1983	382.17	386.78	525.66	486.98	399.67	386.49
1984	403.24	417.32	558.01	520.36	435.86	432.48
1985	415.71	427.04	584.64	534.24	448.80	451.56

NA - Not Available.

Source: U.S. Bureau of Labor Statistics, "Employment and Earnings Statistics, 1909-85."

AVERAGE HOURLY EARNINGS OF PRODUCTION WORKERS

Selected Industry Groups, 1939 to Date, Annual Averages

Year	Durable Goods Industries	Nonelectrical Machinery Industry	Motor Vehicles & Equipment Industry	Aircraft and Parts Industry	Metal Working Machinery Industry	Metal Cutting Machinery Industry
1939	$ .69	NA	$ .92	NA	NA	$ .76
1940	.72	NA	.94	NA	NA	.78
1941	.80	NA	1.04	NA	NA	.86
1942	.94	NA	1.17	NA	NA	.99
1943	1.05	NA	1.24	NA	NA	1.09
1944	1.11	NA	1.27	NA	NA	1.15
1945	1.10	NA	1.27	NA	NA	1.19
1946	1.14	NA	1.35	NA	NA	1.27
1947	1.28	$ 1.34	1.47	$ 1.37	$ 1.38	1.37
1948	1.40	1.46	1.61	1.49	1.49	1.47
1949	1.45	1.52	1.70	1.56	1.54	1.51
1950	1.52	1.60	1.78	1.64	1.65	1.62
1951	1.65	1.75	1.91	1.78	1.83	1.80
1952	1.75	1.85	2.05	1.89	1.97	1.92
1953	1.86	1.95	2.14	1.99	2.10	2.06
1954	1.90	2.00	2.20	2.07	2.17	2.10
1955	1.99	2.08	2.29	2.16	2.24	2.19
1956	2.08	2.20	2.35	2.27	2.40	2.33
1957	2.19	2.29	2.46	2.35	2.48	2.40
1958	2.26	2.37	2.55	2.50	2.55	2.40
1959	2.36	2.48	2.71	2.62	2.67	2.54
1960	2.43	2.55	2.81	2.70	2.74	2.63
1961	2.49	2.62	2.86	2.77	2.80	2.71
1962	2.56	2.71	2.99	2.87	2.90	2.79
1963	2.63	2.78	3.10	2.95	2.97	2.88
1964	2.71	2.87	3.21	3.02	3.08	2.98
1965	2.79	2.96	3.34	3.14	3.18	3.07
1966	2.90	3.09	3.44	3.31	3.32	3.23
1967	3.00	3.19	3.55	3.45	3.45	3.39
1968	3.19	3.37	3.89	3.62	3.64	3.55
1969	3.38	3.58	4.10	3.86	3.90	3.83
1970	3.56	3.77	4.23	4.12	4.12	4.00
1971	3.80	3.99	4.74	4.32	4.28	4.16
1972	4.05	4.27	5.11	4.65	4.59	4.56
1973	4.32	4.55	5.45	5.00	4.84	4.88
1974	4.68	4.92	5.90	5.40	5.18	5.23
1975	5.14	5.36	6.47	5.99	5.51	5.54
1976	5.55	5.76	7.10	6.45	5.94	5.98
1977	6.06	6.26	7.85	6.92	6.49	6.61
1978	6.58	6.78	8.50	7.54	7.02	7.20
1979	7.13	7.32	9.06	8.26	7.57	7.77
1980	7.75	8.00	9.85	9.28	8.18	8.38
1981	8.54	8.81	11.02	10.31	8.94	9.12
1982	9.04	9.26	11.62	11.23	9.55	9.78
1983	9.39	9.55	12.14	11.82	9.82	9.91
1984	9.74	9.96	12.74	12.36	10.16	10.20
1985	10.09	10.29	13.44	12.60	10.56	10.60

NA - Not Available.

Source: U.S. Bureau of Labor Statistics, "Employment and Earnings Statistics, 1909-85."

AVERAGE HOURLY EARNINGS IN THE MACHINERY MANUFACTURING INDUSTRY (a)

In Selected Areas by Occupation, 1978, 1981, 1983

Region and Survey Year	Occupation				
	Machine Tool Operators, Production				
	Class A (b)	Class B (c)	Class C (d)	Numerically Controlled	Tool Room One Type Machine
1. Baltimore, Md.					
Jan. 1978	$ 6.74	$ 5.79	$ 5.24	$ 5.67	$ 6.54(e)
Jan. 1981	9.01	7.84	7.01	8.45	NA
Nov. 1983	10.65	9.61	7.83	10.25	NA
2. Boston, Mass.					
Jan. 1978	6.54	6.01	4.71	6.24	6.72
Jan. 1981	8.59	8.35	5.87	8.71	NA
Nov. 1983	10.99	10.16	NA	9.99	NA
3. Buffalo, N.Y.					
Jan. 1978	6.77	6.28	5.44	7.00	6.80
Jan. 1981	8.97	8.25	7.01	9.47	7.77
Nov. 1983	10.06	8.15	7.29	11.24	10.92
4. Chicago, Ill.					
Jan. 1978	7.36	6.51	5.90	7.55	8.36
Jan. 1981	9.60	8.00	6.63	9.68	11.12
Nov. 1983	11.50	9.28	8.39	11.03	12.63
5. Cleveland, Ohio					
Jan. 1978	7.02	6.01	4.12	7.17	7.09
Jan. 1981	9.43	8.13	6.78	9.41	9.68
Nov. 1983	10.15	8.92	7.10	10.40	10.67
6. Denver, Colo.					
Jan. 1978	6.60	5.36	5.04	6.44	6.63
Jan. 1981	9.30	7.23	NA	8.61	10.68
Nov. 1983	10.41	7.92	5.83	10.26	11.32
7. Detroit, Mich.					
Jan. 1978	8.19	7.01	5.48	7.14	8.94
Jan. 1981	11.61	9.48	6.21	9.98	11.98
Nov. 1983	12.70	10.92	9.58	11.61	12.39
8. Houston, Tx.					
Jan. 1978	7.15	6.66	4.89	7.29	7.26
Jan. 1981	9.92	8.96	5.93	10.25	10.47
Nov. 1983	11.56	9.71	9.68	11.86	11.55
9. L.A.-Long Beach, Cal.					
Jan. 1978	6.87	5.45	3.96	6.86	7.44
Jan. 1981	9.38	7.39	4.83	9.79	9.70
Nov. 1983	12.71	8.38	NA	14.72	12.46
10. Milwaukee, Wis.					
Jan. 1978	7.78	6.89	NA	7.43	7.86
Jan. 1981	10.47	9.91	8.45	10.36	10.63
Nov. 1983	11.71	11.37	10.22	12.06	11.89
11. Newark, N.J.					
Jan. 1978	6.50	6.59	4.85	6.29	7.47
Jan. 1981	9.44	9.04	6.35	7.68	9.25
Nov. 1983	9.83	9.38	5.31	10.54	10.45
12. Pittsburgh, Pa.					
Jan. 1978	7.15	6.71	6.15	6.69	7.21(e)
Jan. 1981	9.44	8.80	8.14	9.38	NA
Nov. 1983	10.53	8.89	7.48	11.46	10.13
13. St. Louis, Mo.-Ill.					
Jan. 1978	8.25	6.14	6.12	7.26	8.03
Jan. 1981	9.45	8.36	8.30	9.27	8.69
Nov. 1983	11.63	9.20	7.27	11.36	12.00

NA - Not Available.

(a) Nonelectrical Machinery (SIC 35).
(b) Operators who set up their own machines and perform a variety of machine operations to close tolerances using decisions based on blueprints and layouts.
(c) Operators who set up their own machines and maintain operation set-ups made by others.
(d) Operators who perform routine and repetitive operations but do not set up machines.
(e) More than one type of machine.

AVERAGE HOURLY EARNINGS IN THE MACHINERY MANUFACTURING INDUSTRY (a)

In Selected Areas by Occupation, 1978, 1981, 1983

(Continued)

	Occupation					
	Assemblers		Inspectors			
	Class A (f)	Class B (g)	Class A (h)	Class B (i)	Laborers, Material Handling	Tool Clerks
1.						
	$ 6.03	$ 5.71	$ 6.72	NA	$ 5.13	$ 5.38
	8.00	6.88	8.88	$ 7.72	7.21	NA
	11.00	7.10	11.45	8.04	5.96	NA
2.						
	6.18	4.89	NA	5.26	4.56	5.73
	8.31	6.62	8.47	7.44	6.18	7.22
	9.14	7.24	10.01	8.53	6.54	9.26
3.						
	6.92	6.43	7.20	6.36	NA	5.86
	9.24	8.07	9.35	7.62	8.11	7.80
	10.36	10.27	10.95	9.54	8.66	8.36
4.						
	6.84	6.49	7.43	6.80	5.86	6.47
	8.95	7.43	9.25	8.56	6.81	9.10
	11.01	8.93	11.54	10.11	8.35	10.15
5.						
	7.21	6.13	7.20	6.65	6.07	6.50
	9.64	7.80	9.93	8.46	8.90	8.86
	11.02	7.43	10.99	9.09	8.90	10.13
6.						
	5.94	4.30	6.67	5.93	4.75	5.89
	7.79	5.40	8.55	7.04	5.89	7.54
	9.53	7.05	9.82	NA	NA	NA
7.						
	7.80	7.23	7.79	6.50	6.94	7.13
	11.17	9.59	11.01	NA	9.45	9.80
	12.47	11.23	12.33	10.75	10.50	11.59
8.						
	6.89	5.86	7.37	6.43	5.38	6.36
	9.75	9.06	10.07	8.45	7.41	7.80
	10.89	10.77	11.57	11.22	9.15	9.20
9.						
	6.29	4.41	6.74	5.50	4.67	5.24
	8.02	6.09	9.77	7.24	5.74	6.93
	10.15	7.29	11.90	7.10	8.45	9.15
10.						
	7.72	6.96	7.24	6.97	6.19	6.28
	10.31	10.05	10.45	9.91	9.24	10.12
	11.45	10.76	11.82	10.92	10.51	10.95
11.						
	6.54	5.71	5.95	6.61	4.96	5.74
	7.93	5.90	7.83	7.77	7.21	7.82
	9.47	8.04	9.60	8.27	6.36	9.09
12.						
	7.14	6.02	7.37	6.66	5.33	6.18
	8.52	7.78	9.44	8.79	8.74	7.48
	9.74	7.63	11.22	10.50	9.68	10.08
13.						
	6.91	5.81	7.24	6.23	5.11	5.81
	9.10	7.57	9.04	8.35	6.79	7.86
	11.49	8.73	10.58	9.44	8.05	9.22

NA - Not Available.

(f) Fits and adjusts parts and makes decisions regarding proper performance of component or unit.

(g) Assembles parts in accordance with standard and prescribed procedures. Requires some fitting and adjusting.

(h) Responsible for decisions regarding quality of product and operations. Troubleshooting and interpreting of drawings and specifications is involved.

(i) Tests products and processes having rigid specifications with established inspection procedures.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

EMPLOYMENT IN THE MACHINE TOOL INDUSTRY

Selected Years, 1937 to Date

Year	Machine Tool Total		Metal Cutting		Metal Forming	
	All Employees	Production Workers	All Employees	Production Workers	All Employees	Production Workers
1937	NA	NA	NA	37,477	NA	NA
1939	NA	NA	NA	36,997	NA	NA
1947	NA	NA	70,001	54,435	NA	NA
1949	NA	NA	52,384	38,584	NA	NA
1950	NA	NA	54,747	41,555	NA	NA
1951	NA	NA	83,855	64,029	NA	NA
1952	NA	NA	102,735	79,471	NA	NA
1953	NA	NA	99,494	76,840	NA	NA
1954	NA	NA	80,959	62,106	NA	NA
1955	NA	NA	77,063	58,600	NA	NA
1956	NA	NA	85,469	65,208	NA	NA
1957	NA	NA	79,895	59,600	NA	NA
1958	75,366	51,726	52,864	36,154	22,502	15,572
1959	75,091	53,332	52,797	35,436	22,294	17,896
1960	81,200	57,439	58,777	39,487	22,423	17,952
1961	78,108	54,633	54,901	36,373	23,207	18,260
1962	82,251	57,662	58,855	39,253	23,396	18,409
1963	83,136	56,790	61,058	41,008	22,078	15,782
1964	88,079	61,196	65,078	44,471	23,001	16,725
1965	96,334	67,257	70,827	48,745	25,517	18,512
1966	108,174	76,190	79,767	55,279	28,407	20,911
1967	116,400	81,400	87,200	60,500	29,200	20,900
1968	112,200	76,900	84,300	57,500	27,900	19,400
1969	110,600	74,700	82,600	55,300	28,000	19,400
1970	100,200	65,900	71,300	45,800	28,900	20,100
1971	78,400	49,200	54,000	33,200	24,400	16,000
1972	76,600	50,000	52,500	33,400	24,100	16,600
1973	86,900	58,700	59,900	39,800	27,000	18,900
1974	94,000	64,200	65,000	43,900	29,000	20,300
1975	88,800	58,500	62,800	40,800	26,000	17,700
1976	81,000	53,500	58,100	37,600	22,900	15,900
1977	83,100	53,300	59,400	37,200	23,700	16,100
1978	89,500	59,200	64,300	42,200	25,200	17,000
1979	96,100	64,400	69,100	45,700	27,000	18,700
1980	99,700	66,000	72,800	47,800	26,900	18,200
1981	98,300	63,900	74,300	47,900	24,000	16,000
1982(r)	77,800	46,000	58,300	33,900	19,500	12,100
1983(r)	58,300	34,100	43,000	24,500	15,300	9,600
1984E	63,000	36,900	46,500	26,500	16,500	10,400

NA - Not Available.   E - Estimate by NMTBA.   r - Revised.

Sources: U.S. Bureau of the Census, "Census of Manufactures" and "Annual Survey of Manufactures."

EMPLOYMENT AND COMPENSATION
Machine Tool Industry
Selected Years, 1960 to Date

	All Employees		Production Workers		
Year	Number	Payroll (Million $)	Number	Man-hours (Million)	Wages (Million $)
1960	81,200	$ 523.0	57,439	116.7	$ 324.7
1962	82,251	573.8	57,662	118.2	344.5
1964	88,079	678.0	61,196	135.2	428.4
1966	108,174	918.3	76,190	171.2	591.7
1968	112,200	1,001.0	76,900	163.1	619.7
1970	100,200	965.3	65,900	136.6	572.6
1971	78,400	774.6	49,200	97.4	428.7
1972	76,600	839.2	50,000	103.3	489.7
1973	86,900	1,033.0	58,700	125.1	623.0
1974	94,000	1,245.2	64,200	135.8	748.0
1975	88,800	1,193.4	58,500	117.5	695.2
1976	81,000	1,182.2	53,500	105.5	688.1
1977	83,100	1,309.7	53,300	109.1	760.1
1978	89,500	1,536.3	59,200	123.3	932.8
1979	96,100	1,789.7	64,400	133.4	1,092.0
1980	99,700	2,018.1	66,000	134.0	1,202.7
1981	98,300	2,129.8	63,900	129.3	1,259.0
1982(r)	77,800	1,773.1	46,000	86.8	954.5
1983	58,300	1,354.1	34,100	63.7	708.1

r - Revised.

Sources: U.S. Bureau of the Census, "Census of Manufactures" and "Annual Survey of Manufactures."

EMPLOYMENT AND COMPENSATION
Machine Forming Machine Tool Industry
Selected Years, 1960 to Date

	All Employees		Production Workers		
Year	Number	Payroll (Million $)	Number	Man-hours (Million)	Wages (Million $)
1960	22,423	$152.1	17,952	35.8	$100.9
1962	23,396	172.0	18,409	37.0	109.5
1964	23,001	180.3	16,725	37.9	121.6
1966	28,407	244.9	20,911	47.4	164.2
1968	27,900	245.8	19,400	42.9	157.4
1970	28,900	280.6	20,100	43.4	177.3
1971	24,400	241.5	16,000	32.9	142.5
1972	24,100	265.4	16,600	34.7	163.8
1973	27,000	323.6	18,900	41.8	205.1
1974	29,000	370.8	20,300	43.3	238.2
1975	26,000	343.1	17,700	35.8	208.2
1976	22,900	336.8	15,900	32.0	214.2
1977	23,700	360.7	16,100	32.8	219.4
1978	25,200	415.6	17,000	35.1	253.2
1979	27,000	485.6	18,700	37.5	305.1
1980	26,900	514.1	18,200	35.2	313.2
1981	24,000	496.8	16,000	30.8	294.9
1982	19,500	438.1	12,100	23.2	245.3
1983	15,300	357.0	9,600	17.8	196.0

Sources: U.S. Bureau of the Census, "Census of Manufactures" and "Annual Survey of Manufactures."

EMPLOYMENT AND COMPENSATION
Metal Cutting Machine Tool Industry
1937 to Date

	All Employees		Production Workers		
Year	Number	Payroll (Million $)	Number	Man-hours (Million)	Wages (Million $)
1937	NA	NA	37,477	NA	$ 62.6
1939	NA	NA	36,997	NA	62.9
1947	70,001	$ 234.0	54,435	113.4	165.0
1949	52,384	190.4	38,584	74.5	120.0
1950	54,747	226.8	41,555	88.6	150.6
1951	83,855	396.4	64,029	155.7	281.0
1952	102,735	524.5	79,471	194.6	385.3
1953	99,494	537.6	76,840	175.3	392.6
1954	80,959	432.3	62,106	133.2	302.7
1955	77,063	426.6	58,600	128.1	297.2
1956	85,469	511.9	65,200	147.5	360.6
1957	79,895	470.9	59,600	125.4	319.3
1958	52,864	300.3	35,154	69.6	182.2
1959	52,797	329.5	36,436	72.2	202.0
1960	58,777	370.9	39,487	80.9	223.8
1961	54,901	353.0	36,373	72.7	201.5
1962	58,855	401.8	39,253	81.2	235.0
1963	61,058	438.2	41,008	86.5	272.2
1964	65,078	497.7	44,471	97.3	306.8
1965	70,827	565.0	48,745	108.1	353.7
1966	79,767	673.4	55,279	123.8	427.5
1967	87,200	759.9	60,500	131.8	476.5
1968	84,300	755.2	57,500	120.2	462.3
1969	82,600	791.6	55,300	116.0	477.5
1970	71,300	684.7	45,800	93.2	395.3
1971	54,000	533.1	33,200	64.5	286.2
1972	52,500	573.8	33,400	68.2	325.9
1973	59,900	709.4	39,800	83.3	417.9
1974	65,000	874.4	43,900	92.5	509.8
1975	62,800	850.3	40,800	81.7	486.8
1976	58,100	845.4	37,600	73.5-	473.9
1977	59,400	949.0	37,200	76.3	540.7
1978	64,300	1,120.7	42,200	88.2	679.6
1979	69,100	1,304.1	45,700	95.9	786.9
1980	72,800	1,504.0	47,800	98.8	889.5
1981	74,300	1,633.0	47,900	98.5	964.1
1982(r)	58,300	1,335.0	33,900	63.6	709.2
1983	43,000	997.1	24,500	45.9	512.1

r - Revised. NA - Not Available.

Sources: U.S. Bureau of the Census, "Census of Manufactures" and "Annual Survey of Manufactures."

SELECTED LABOR RATIOS

1962 to Date

	Payroll per Employee	Prod. Wkrs. % of Total Employment	Annual Man-Hours of Prod. Workers	Average Hourly Earnings, Prod. Workers	Value Added Per Employee	Payroll as % of Value Added	Value Added per Man Hour of Prod. Wkrs.
METAL CUTTING MACHINE TOOL INDUSTRY							
1962	$ 6,827	67%	2,069	$ 2.89	$11,401	60%	$ 8.26
1963	7,171	67	2,109	3.14	11,445	62	8.08
1964	7,645	68	2,186	3.15	12,844	59	8.59
1965	7,980	68	2,219	3.27	14,033	56	9.19
1966	8,438	69	2,238	3.45	15,466	54	9.96
1967	8,714	69	2,179	3.62	15,955	55	10.56
1968	8,958	68	2,090	3.85	16,336	55	11.46
1969	9,584	67	2,098	4.12	17,452	55	12.43
1970	9,603	64	2.035	4.24	15,597	62	11.93
1971	9,872	61	1,943	4.44	15,181	65	12.71
1972	10,930	64	2,042	4.78	17,175	64	13.22
1973	11,843	66	2,093	5.02	20,269	58	14.58
1974	13,452	68	2 107	5.51	24,877	54	17.48
1975	13,540	65	2,002	5.96	26,119	52	20.07
1976	14,551	64	1,955	6.45	28,642	51	22.64
1977	15,976	63	2,051	7.09	31,416	51	24.46
1978	17,429	66	2,090	7.71	35,257	49	25.70
1979	18,873	66	2,098	8.21	41,010	46	29.55
1980	20,659	66	2,067	9.00	46,005	45	33.90
1981	21,978	64	2,056	9.79	50,335	44	37.97
1982(r)	22,899	58	1,876	11.15	43,160	53	39.56
1983(p)	23,188	57	1,873	11.16	37,505	62	35.13
METAL FORMING MACHINE TOOL INDUSTRY							
1962	$ 7,351	79%	2,012	$ 2.96	$11,363	65%	$ 7.18
1963	7,316	71	2,189	3.10	12,728	57	8.13
1964	7,839	72	2,260	3.20	13,847	56	8.40
1965	8,058	72	2,243	3.34	13,686	56	8.40
1966	8,623	73	2,267	3.46	15,214	56	9.11
1967	8,548	72	2,211	3.57	14,973	57	9.46
1968	8,810	70	2,211	3.67	16,247	54	10.57
1969	9,664	69	2,186	4.06	16,182	60	10.69
1970	9,709	70	2,159	4.09	16,249	60	10.82
1971	9,898	66	2,056	4.33	14,914	66	11.06
1972	11,012	69	2,090	4.72	17,332	64	12.04
1973	11,985	70	2,212	4.91	20,241	59	13.07
1974	12,786	70	2,133	5.50	21,852	59	14.64
1975	13,196	68	2,023	5.82	23,781	55	17.27
1976	14,707	69	2,013	6.69	27,122	54	19.41
1977	15,219	68	2,037	6.69	30,460	50	22.01
1978	16,492	67	2,065	7.21	33,385	49	23.97
1979	17,985	69	2,005	8.14	37,185	48	26.77
1980	19,112	68	1,934	8.90	38,740	49	29.61
1981	20,700	67	1.925	9.57	40,688	51	31.70
1982	22,467	62	1,917	10.57	39,887	56	33.53
1983(p)	23,333	63	1,854	11.01	41,150	57	35.37

p – Preliminary. r – Revised.

Source: 1958, 1963, 1967, 1972, 1977, 1982, 1983: U.S. Bureau of the Census, "Census of Manufactures," 1982, Industry Series: "Metalworking Machinery and Equipment," MC 82 – 1 – 35C and earlier years. Other Years: U.S. Bureau of the Census, "Annual Survey of Manufactures."

WEEKLY OVERTIME HOURS OF PRODUCTION WORKERS

Selected Industry Groups, 1960 to Date, Annual Averages

Year	Manufacturing	Durable Goods Industry	Nonelectrical Machinery Industry	Metalworking Machinery Industry
1960	2.4	2.4	2.7	4.3
1961	2.4	2.3	2.5	3.4
1962	2.8	2.8	3.1	4.7
1963	2.8	2.9	3.2	4.8
1964	3.1	3.3	3.9	5.9
1965	3.6	3.9	4.6	6.7
1966	3.9	4.3	5.5	7.8
1967	3.4	3.5	4.4	6.5
1968	3.6	3.8	4.0	5.4
1969	3.6	3.8	4.5	6.0
1970	3.0	2.9	3.2	4.3
1971	2.9	2.9	2.6	2.8
1972	3.5	3.6	3.8	4.9
1973	3.8	4.1	4.7	6.4
1974	3.2	3.4	4.3	5.8
1975	2.6	2.5	3.0	3.3
1976	3.1	3.1	3.1	4.0
1977	3.5	3.7	4.0	5.5
1978	3.6	3.8	4.3	5.9
1979	3.3	3.5	4.0	5.7
1980	2.8	2.8	3.4	4.8
1981	2.8	2.8	3.2	4.1
1982	2.3	2.2	2.2	2.7
1983	3.0	3.0	2.7	3.3
1984	3.4	3.6	3.7	4.9
1985	3.3	3.5	3.4	4.6

Sources: U.S. Bureau of Labor Statistics, "Employment and Earnings," monthly and annual supplements.

WORK INJURY RATES

By Industry, 1982 (a)

Industry	Incidence Rates (per 100 Employees) Total Recordable Cases	Lost Workday Cases	Nonfatal Cases Without Lost Workdays	Average Lost Workdays Per Lost Workday Case
Manufacturing	9.9	4.3	5.6	17.0
Fabricated Metal Products	14.9	6.2	8.7	16.0
Metal Stampings	14.6	5.7	8.9	16.0
Machinery Except Electrical	10.5	4.1	6.4	16.0
Engines and Turbines	7.8	3.5	4.3	18.0
Construction and Related Machinery	14.3	5.9	8.4	16.0
Metalworking Machinery	11.0	3.6	7.4	16.0
Machine Tools, Metal Cutting Types	11.3	4.1	7.2	16.0
Machine Tools, Metal Forming Types	12.8	4.9	7.9	17.0
Special Industry Machinery	12.6	4.7	7.9	15.0
General Industrial Machinery	12.0	4.8	7.2	16.0
Transportation Equipment	8.8	3.9	4.8	18.0
Motor Vehicles and Equipment	8.2	3.4	4.8	16.0

(a) The publication of this data was discontinued in 1982.

Note: Data represents work-related injuries and illnesses in comparable industries.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

AVERAGE HOURLY EARNINGS AND SUPPLEMENTARY LABOR COST

In the Machine Tool Industry of the United States and Seven Foreign Countries

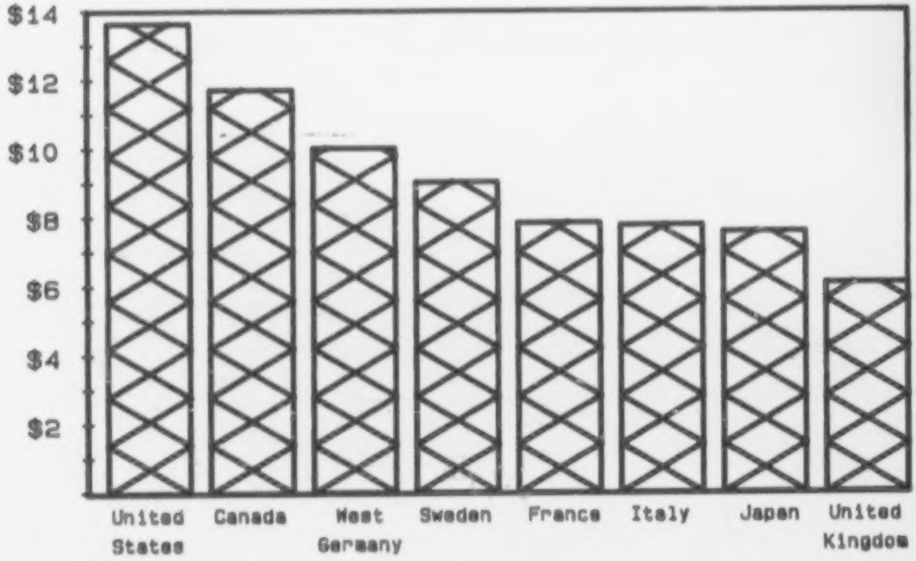
Country	Date	Industry	Workers Covered	Average Hourly Earnings	Estimated Supplementary Labor Cost	Total Compensation
Sweden	1984	(3)	P.W.	$5.40	$3.64	$ 9.04
France	1984	(3)	P.W.	4.30	3.54	7.84
Germany (Federal Republic)	1984	(3)	P.W.	5.66	4.37	10.03
Italy	1983	(3)	P.W.	4.16	3.78	7.94
Switzerland	1984	(2)	P.W.	7.39	2.73	10.12
United Kingdom	1984	(3)	P.W.	4.54	1.53	6.07
Japan	1984	(1)	P.W.	6.18	1.02	7.20
United States	1984	(1)	P.W.	10.16	3.58	13.74

P.W. - Production Workers.

(1) Machine Tools.
(2) Metals and Machines.
(3) Non-Electrical Machinery.

Source: U.S. Bureau of Labor Statistics, Branch of International Comparisons.

This table differs from the one shown in chapter 2 because if focuses directly on the machine tool industry compensation. The other table shows production woker compensation in manufacturing as a whole.



Average Hourly Compensation
of Production Workers
Machinery, Except Electrical, 1984

AVERAGE HOURLY EARNINGS IN METAL AND METALWORKING INDUSTRIES
In Selected Countries, 1980 to Date

Country	Industry	1980	1981(r)	1982(r)	1983(r)	1984	Percent Change 1980-84
Canada	(1)	$7.55	$8.25	$8.75	$9.13(b)	$8.79	16.4%
France	(1)	5.72	5.15	4.88	4.68	4.32	-24.5
Italy	(1)	5.51	5.13	4.99	NA	NA	NA
Japan	(1)	7.36	7.32	6.84	7.27	7.51	2.0
Switzerland	(2)	8.89	8.11	8.38	8.40	7.69	-13.5
United Kingdom (a)	(1)	6.13	5.84	5.50	5.02	4.73	-27.7
United States	(1)	8.00	8.81	9.26	9.55	9.96	24.5
West Germany	(1)	7.69	6.48	6.32	6.21	5.88	-23.5

r - Revised. NA - Not Available.

(a) Men only.
(b) Ten month average.
(1) —Machinery, except electrical.
(2) —Basic metal and fabricated metal products.

Sources: "ILO 1984 Statistical Yearbook" ("Statistics of average earnings ... usually cover cash payments received from employers, i.e., remuneration for normal working hours, payments for overtime and time not worked (holidays, vacation, etc.), production bonuses, cost-of-living allowances and special premiums ...").

AVERAGE HOURLY COMPENSATION OF PRODUCTION WORKERS
In Selected Industry Groups, 1984 (a)

Country	All Manufacturing	Machinery, Except Electrical	Electrical Equipment	Motor Vehicles
United States	$12.47	$13.65	$12.47	$18.97
Canada	11.07	11.73	10.39	13.14
France	7.48	7.84	7.38	8.42
West Germany	9.60	10.03	9.15	12.28
Italy	7.53	7.77E	7.42E	7.79
Japan	6.35	7.37	5.78	7.92(b)
Sweden	9.17	9.04	8.79	9.67
United Kingdom	6.03	6.07	5.48	6.67

E - Estimated by NMTBA.

(a) Preliminary estimates.
(b) Includes motorcycle manufacturing.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

8

FINANCE

Publicly available data on the financial status of the machine tool industry is scarce. A few sources are the annual reports of the publicly owned machine tool companies and of other companies that produce machine tools. Government statistics on the capital expenditures for "structures and additions" and for "machinery and equipment" in the metal cutting and metal forming machine tool industries are an indirect measure of financial health.

Selected financial indicators for a machine tool composite from the "Industry Surveys" of Standard and Poor's Corporation are included in this chapter. The machine tool composite figures are based on a weighted average of individual company data. Prior to 1980, six companies formed the basis of the composite. Since 1980, only five firms have been included. However, since the figures presented are weighted according to the total market value of equity stock outstanding in these firms, comparisons between data before and after 1980 should prove valid.

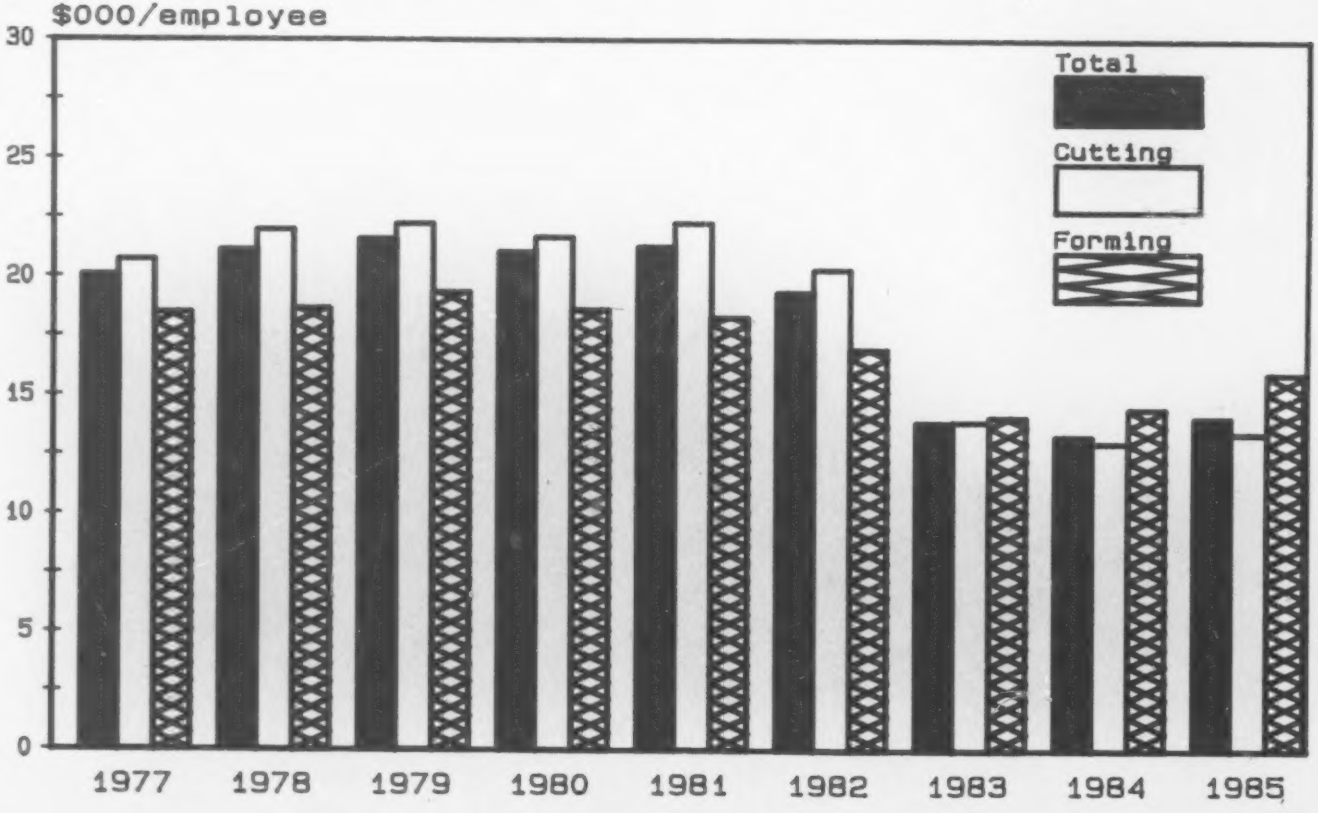
Each indicator from "Industry Surveys" is an index based on average value per share of outstanding stock. We have converted these indicators from the original base of 1941—1943 = 10 to 1967 = 100 to conform with other indexes in this publication. The financial indicators for the composite do not necessarily represent an average for the entire machine tool industry, but given the scarcity of financial information, are a valuable addition to this chapter.

Data collected by an outside research group for the National Machine Tool Builders' Association indicate that the rate of profit of machine tool manufacturers tends to be somewhat higher than that of all manufacturing industries during good times, but drastically worse in less prosperous periods.

It should be emphasized that all the data in this section are in current dollars and that in periods of rapid inflation the true state of earnings and capital accumulation is seriously distorted. In particular, an inflationary environment leads to the overstatement of "inventory profits" and the understatement—relative to replacement costs—of depreciation charges on capital equipment.

Machine Tool Industry Productivity

(Constant Dollar Shipments per Production Worker)



SELECTED FINANCIAL RATIOS FOR CORPORATIONS
IN SELECTED INDUSTRIES, 1985

Industry	% Net Operating Profit on Sales	% Earnings After Taxes On Sales	% Earnings After Taxes On Net Worth	% Depreciation and Amortization On Net Sales	Times Inventory Turnover	Current Assets to Current Liabilities
Machine Tools	(0.5%)	(0.5%)	(1.1%)	2.9%	3.4	2.3
All Manufacturing Corporations	5.9	3.7	10.0	4.0	6.8	1.5
Durable Manufactures	5.4	3.4	9.3	3.8	5.5	1.6
Electrical Machinery	5.5	3.3	8.5	3.7	5.1	1.6
Machinery, Except Electrical	6.2	4.7	9.2	4.3	4.8	2.0
Motor Vehicles	4.9	4.4	16.6	3.6	5.0	1.6
Chemical and Allied Products	6.3	4.4	9.2	4.5	6.9	1.4

() - Negative Number.

Source: U.S. Department of Commerce, Bureau of Census, "Quarterly Financial Report for Manufacturing Corporations" and NMTBA.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS (a)
Machine Tool Industry, 1964 to Date
(Millions of Dollars)

Year	Total	Metal Cutting Industry			Metal Forming Industry		
		Total	Structures and Additions	Machinery and Equipment	Total	Structures and Additions	Machinery and Equipment
1964	$ 800	$ 558	NA	NA	$242	NA	NA
1965	NA	NA	NA	NA	NA	NA	NA
1966	NA	NA	NA	NA	NA	NA	NA
1967	1,099	800	$245	$ 555	299	$ 88	$211
1968	1,161	845	253	592	316	94	222
1969	1,224	889	269	620	335	98	237
1970	1,235	884	270	614	351	109	242
1971	1,241	874	272	602	367	114	253
1972	1,228	841	263	578	387	120	267
1973	1,251	851	259	592	400	121	279
1974	1,324	895	260	635	429	131	298
1975	1,356	937	266	671	419	125	294
1976	1,412	1,000	279	721	412	127	285
1977	1,498	1,044	310	734	454	133	321
1978	1,698	1,180	340	840	518	145	373
1979	1,892	1,336	383	953	556	155	401
1980	2,052	1,469	416	1,053	583	164	420
1981	2,324	1,599	449	1,150	725	205	520
1982(r)	2,435	1,692	475	1,217	743	203	541
1983	2,316	1,677	472	1,205	639	176	464

r - Revised. NA - Not Available.

(a) Includes all fixed depreciable assets on the books of establishments at year end. Values represent actual cost of assets at the time they were acquired. Total includes all buildings, structures, machinery and equipment. Machinery and equipment includes production, office and transportation equipment.

Source: U.S. Bureau of the Census, "Census of Manufactures," 1963, 1967, 1972, 1977, 1982, 1983; U.S. Bureau of the Census, "Annual Survey of Manufactures."

NEW CAPITAL EXPENDITURES IN THE MACHINE TOOL INDUSTRY

1954 to Date

(Millions of Dollars)

		Metal Cutting Industry			Metal Forming Industry		
Year	Total	Total	Structures and Additions	Machinery and Equipment	Total	Structures and Additions	Machinery and Equipment
1954	NA	$ 37.7	$11.2	$ 26.5	NA	NA	NA
1955	NA	44.0	NA	NA	NA	NA	NA
1956	NA	49.2	NA	NA	NA	NA	NA
1957	NA	39.7	NA	NA	NA	NA	NA
1958	$ 30.5	18.8	1.9	16.9	$11.7	$ 3.8	$ 7.9
1959	31.9	22.2	NA	NA	9.7	NA	NA
1960	37.4	24.8	NA	NA	12.6	NA	NA
1961	26.4	18.7	NA	NA	7.7	NA	NA
1962	39.3	26.6	NA	NA	12.7(a)	NA	NA
1963	39.6	28.8	5.4	23.4	10.8	2.1	8.7
1964	71.7	41.7	11.0	30.7	30.0(a)	7.5(a)	22.5(a)
1965	74.2	53.7	10.2	43.5	20.5	4.4(a)	16.1
1966	102.5	74.9	17.1	57.8	27.6	6.2(a)	21.4(a)
1967	104.9	78.7	19.3	59.3	26.2	5.7	20.5
1968	90.9	62.3	9.1	53.2	28.6	7.7	20.9
1969	105.0	75.5	21.8	53.7	29.5	7.7	21.8
1970	72.7	49.3	11.7	37.6	23.4	7.8	15.6
1971	39.1	28.7	4.6	24.1	10.4	1.6	8.9
1972	52.7	35.2	7.2	28.0	17.5	4.7	12.8
1973	65.9	38.4	7.3	31.1	27.5	4.0	23.4
1974	93.3	58.9	10.6	48.3	34.4	8.6	25.9
1975	76.1	52.2	7.9	44.2	23.9	4.0	19.9
1976	93.5	65.2	11.2	54.0	28.3	10.8	17.5
1977	132.4	107.9	19.1	88.8	24.5	2.6	21.9
1978	142.4	102.0	22.4	79.6	40.4	5.8	34.6
1979	199.4	147.6	31.8	115.8	51.8	9.7	42.1
1980	241.0	171.6	39.8	131.8	69.4	14.5	54.9
1981	296.2	233.2	52.3	180.9	63.0	12.8	50.2
1982(r)	190.3	152.2	32.8	119.4	38.1	4.3	33.8
1983	132.9	104.8	18.6	86.2	28.1	4.6	23.5

NA - Not Available. r – Revised.

(a) Standard errors exceeding 15%, not consistent with other Census data in metal forming.

NOTE: Change of definition of machine tool industry makes comparisons before 1957 difficult.

Source: U.S. Bureau of the Census, "Census of Manufactures," 1963, 1967, 1972, 1977, 1982, 1983; U.S. Bureau of the Census, "Annual Survey of Manufactures."

MACHINE TOOL FINANCIAL INDICATORS (a)

Per Share Data

(1967 = 100)

Year	Sales	Operating Profit	Depreciation	Book Value	Working Capital	Capital Expenditures
1956	73.4	66.0	45.8	75.3	67.1	90.7
1957	67.9	53.3	50.9	78.8	71.0	67.2
1958	42.6	14.9	52.4	77.4	70.3	51.4
1959	46.3	15.7	53.8	75.5	68.0	42.5
1960	54.8	26.5	56.6	75.6	65.8	61.1
1961	54.1	29.3	56.1	76.4	67.6	45.3
1962	59.6	28.4	50.9	77.8	70.1	44.9
1963	61.7	37.2	58.0	80.0	72.2	61.9
1964	64.9	57.1	66.0	74.5	66.1	95.1
1965	77.2	70.1	73.6	81.6	82.2	103.2
1966	92.9	88.7	84.4	90.2	92.1	142.5
1967	100.0	100.0	100.0	100.0	100.0	100.0
1968	99.0	100.3	117.5	106.9	101.7	167.6
1969	100.7	87.6	118.9	110.2	103.6	156.7
1970	89.7	42.4	120.8	110.1	107.7	122.3
1971	73.4	16.2	112.7	108.0	101.9	93.9
1972	88.4	32.2	111.8	106.2	104.7	150.6
1973	119.4	73.1	116.0	111.8	107.4	217.8
1974	145.0	81.4	124.5	116.5	153.2	247.8
1975	156.6	82.7	136.8	120.5	159.6	176.5
1976	146.9	79.0	142.5	124.8	154.1	156.3
1977	167.2	114.5	151.9	132.5	158.1	208.9
1978	197.7	165.5	157.1	149.2	169.9	248.2
1979	237.5	234.4	177.8	177.8	190.0	371.7
1980	309.2	277.9	218.4	226.8	263.4	542.6
1981	331.1	284.3	259.0	254.7	272.0	489.4
1982	320.2	207.3	334.4	NA	287.4	541.0
1983	200.6	5.4	361.8	272.3	256.4	321.7
1984	236.9	81.9	356.6	273.7	249.7	512.6

NA – Not Available.

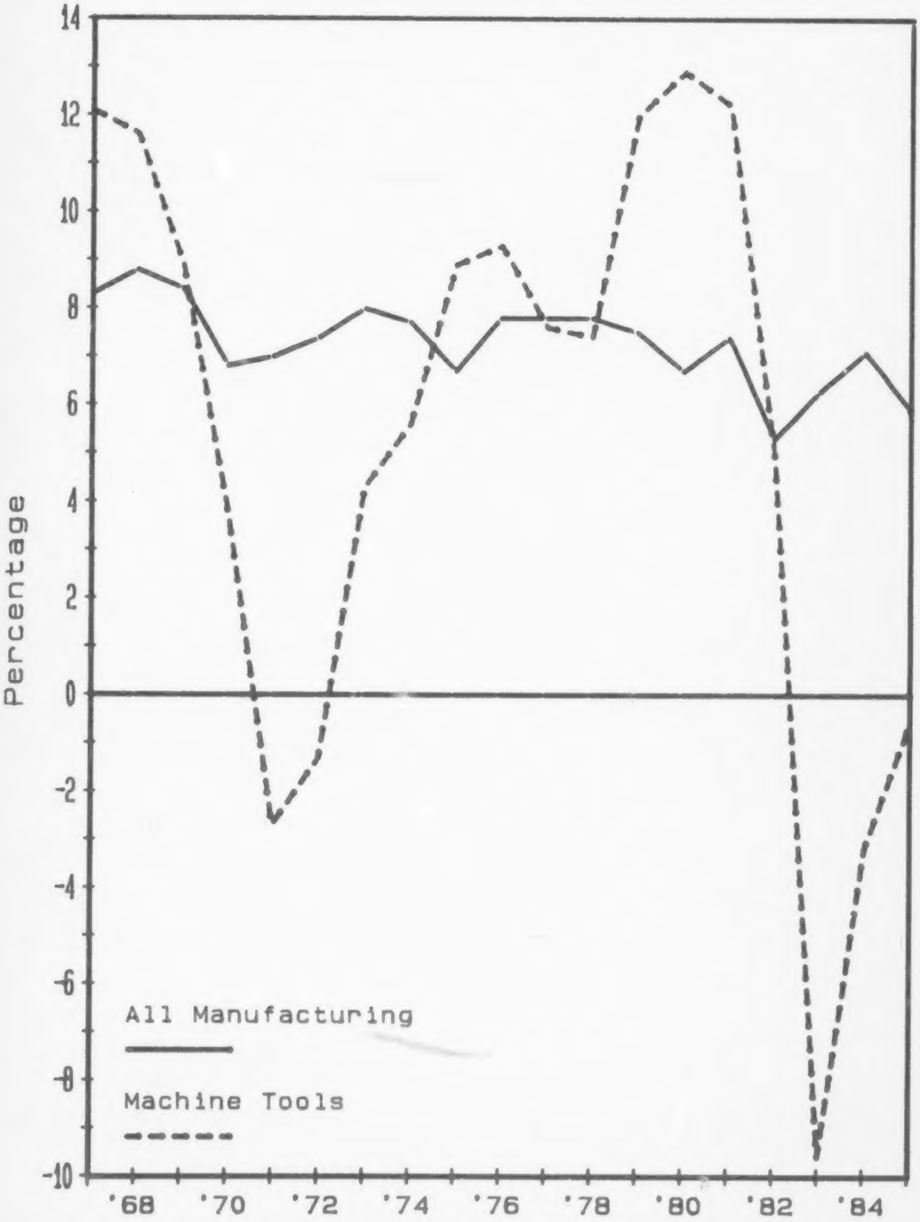
(a) Data in this table prior to 1980 represents a composite of financial information for six publicly held machine tool companies. Companies included in the group have changed through time. Since 1980, the composite has included five companies. However, since the indicators are weighted according to the market value of shares outstanding, a shift in the composite's composition should not affect the indicators. Therefore, pre– and post–1980 data are comparable.

Source: Standard & Poor's Corporation, Data in original form, 1941–43 equals 10, taken from "Industry Surveys," a copyright of Standard & Poor's Corporation. "Industry Surveys" has a wide variety of additional information for the machine tool composite and individual companies.

Net Income Before Taxes as a Percent of Sales

All Manufacturing & Machine Tools

1967 to Date



AVERAGE NET INCOME OF ALL MANUFACTURING CORPORATIONS AND MACHINE TOOL COMPANIES SURVEYED

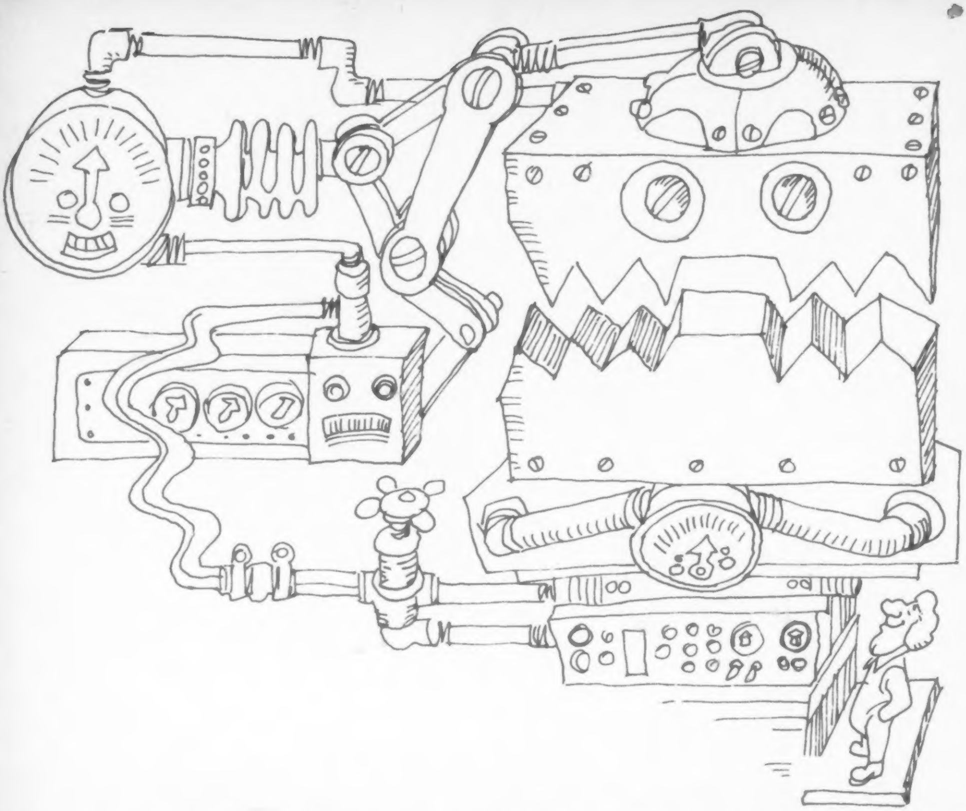
1967 to Date

	NET INCOME BEFORE TAXES			
	As Percent of Sales		As Percent of Assets	
Year	All Manufacturers	Machine Tool Manufacturers (a)	All Manufacturers	Machine Tool Manufacturers
1967	8.3%	12.1%	10.9%	16.6%
1968	8.8	11.6	11.7	15.1
1969	8.4	8.9	10.7	10.6
1970	6.8	3.8	8.3	4.8
1971	7.0	(2.7)	8.7	(2.7)
1972	7.4	(1.3)	9.5	(1.4)
1973	8.0	4.3	11.0	4.8
1974	7.7	5.6	10.7	7.2
1975	6.7	8.9	8.8	12.7
1976	7.8	9.3	10.6	12.3
1977	7.8	7.6	13.5	12.8
1978	7.8	7.4	10.7	11.8
1979	7.5	12.0	11.1	16.9
1980	6.7	12.9	9.5	19.4
1981	7.4	12.2	10.5	18.0
1982	5.3	5.0	6.7	6.1
1983	6.3	(9.6)	7.9	(8.7)
1984	7.1	(3.2)	8.9	(3.4)
1985	5.9	(0.6)	7.1	(0.7)

(a) Data based on the machine tool activities of 111 companies and divisions.

Note: Figures in parentheses represent negative figures.

Sources: National Machine Tool Builders' Association, U.S. Department of Commerce, Bureau of Census, "Quarterly Financial Report for Manufacturing Corporations" (Quarterly).



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MACHINE TOOLS IN USE

American Machinist magazine has been conducting surveys of metalworking equipment in use by American industry for over 50 years - a total of 13 complete Inventories. Through the years the impact of advancing technology, shifting industrial classifications and improved statistical techniques have brought about changes in procedures for compilation and publication of inventory data.

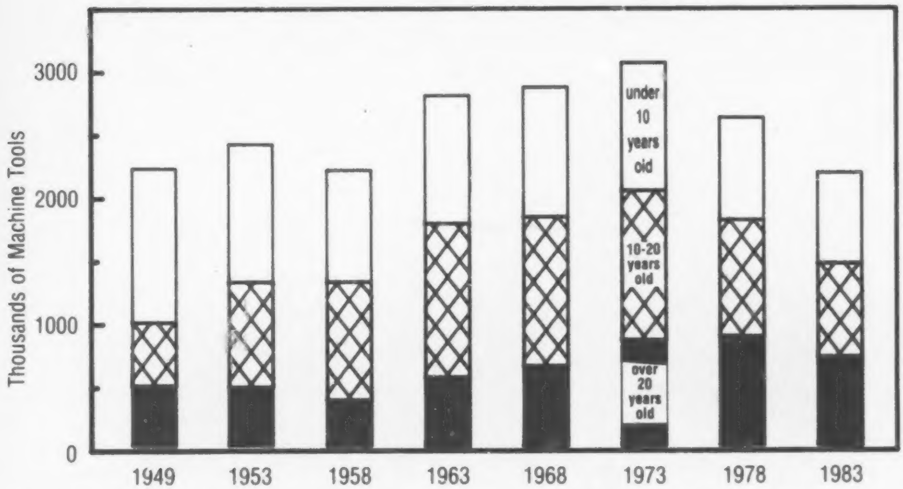
Through 1973, the Inventory was conducted every five years covering all the metalworking industries. The 12th Inventory was conducted over a period of three years with approximately one-third of metalworking surveyed each year from 1976 to 1978. The latest Inventory, the 13th of the series, returned to the format employed in the first eleven, i.e. surveying all metalworking industries in one year. The 13th Inventory was conducted in 1983 and its results were published late in the year. All of the tables and charts in this chapter have been updated to reflect this latest compilation.

The American Machinist Inventory is based on a sample survey and it is the nature of such surveys that the reliability of the data is greatest in the broader categories. The survey's reliability necessarily decreases as results are broken down into smaller and smaller cells. A broad breakdown, such as "grinding machine tools in the North Central States," will therefore tend to be more reliable than a very detailed breakdown such as "circular saws, over 20 years old, in New Mexico and Texas." Another limitation is the coverage of the survey. While the data compiled are believed to accurately reflect the number and types of machine tools in use in U.S. metalworking industries, the user should be aware of the sample's limitations. For all but the 12th Inventory, all of metalworking manufacturing was surveyed to arrive at tabulated results. In the 12th Inventory, estimates were made for metalworking plants with fewer than twenty employees as these establishments were not surveyed. Tables containing these estimates are so noted. Secondly, the coverage of the survey is based on employment totals, not the number of plants. For example, in the 1983 Inventory, the number of plants responding to the survey comprised only 7% of the total number of establishments with more than twenty employees recognized by the U.S. Bureau of Census. However, this 7% represented an employee base of approximately 25% of metalworking employment. This level of representation bolsters the survey's reliability.

Also included in this chapter is a chart of Inventory data showing the number of machine tools in use in seven industrial nations and their average age distribution. This chart brings to light the fact that while the U.S. has a very large stock of machine tools it is also a relatively old, somewhat obsolescent stock.

Additional information concerning the American Machinist Inventory may be obtained from Manufacturing Research Institute of American Machinist, 1221 Avenue of the Americas, New York, New York 10020.

Machine Tools in Use in Metalworking Industries



Source: American Machinist, "12th Inventory of Metalworking Equipment, 1976-1978."

TOTAL MACHINE TOOLS IN THE UNITED STATES

Estimated Number, 1983

Use or Location	Total	Metal Cutting	Metal Forming
TOTAL	2,896,754	2,247,833	648,921
Metalworking Industries (a)	2,192,754	1,702,833	489,921
Other Industries	380,000	275,000	105,000
Training	74,000	70,000	4,000
In Storage and Surplus	250,000	200,000	50,000

(a) As used here, metalworking industries are: furniture industry (SIC 25), primary metals industry (SIC 33), fabricated metal products industry (SIC 34), non-electrical machinery industry (SIC 35), electrical machinery industry (SIC 36), transportation equipment industry (SIC 37), precisioninstruments industry (SIC 38), and miscellaneous manufacturing industry (SIC 39).

Source: American Machinist, "13th Inventory of Metalworking Equipment, 1983."

MACHINE TOOLS IN USE
Metalworking Industries,1963 to 1983
(Number in Thousands and Percent of Total)

		By Age						With Numerical Control	
		Under 10 Years		10–19 Years		Over 20 Years			
Year-Industry	Total	Number	%	Number	%	Number	%	Number	%
1963									
All Metalworking	2,808.5	1,011.1	36.0	1,215.6	43.3	581.8	20.7	NA	NA
Non-Electrical Machy.	951.9	315.0	33.1	424.0	44.5	212.9	22.4	NA	NA
Metalworking Machy.	210.6	77.9	37.0	90.3	42.9	42.4	20.1	NA	NA
Machine Tools	NA	NA	NA	NA	NA	NA	NA	NA	NA
1968									
All Metalworking	2,869.8	1,021.4	35.6	1,176.2	41.0	672.2	23.4	14.2	0.5
Non-Electrical Machy.	912.5	325.3	35.6	350.4	38.4	236.9	26.0	6.8	0.7
Metalworking Machy.	248.7	97.1	39.0	93.9	37.8	57.7	23.2	1.8	0.7
Machine Tools	NA	NA	NA	NA	NA	NA	NA	NA	NA
1973									
All Metalworking	3,065.5	1,009.8	32.9	1,185.1	38.7	870.6	28.4	28.6	0.9
Non-Electrical Machy.	1,103.6	379.8	34.4	410.9	37.2	312.9	28.4	15.1	1.4
Metalworking Machy.	274.5	105.5	38.4	102.3	37.3	66.6	24.3	3.3	1.2
Machine Tools	57.1	17.2	20.1	20.0	35.0	19.9	34.9	1.5	2.6
1976-1978 (a, b)									
All Metalworking	2,630.7	802.6	30.5	927.2	35.2	900.9	34.2	52.9	2.0
Non-Electrical Machy.	961.0	314.8	32.8	337.5	35.1	308.7	32.1	29.7	3.1
Metalworking Machy.	242.1	82.1	33.9	87.8	36.3	72.2	29.8	6.9	3.1
Machine Tools	69.5	16.0	23.0	25.6	36.8	27.8	40.0	2.6	3.7
1983 (b)									
All Metalworking	2,192.8	717.9	32.7	746.4	34.0	728.5	33.2	103.3	4.7
Non-Electrical Machy.	805.3	285.3	35.4	272.4	33.8	247.6	30.7	52.5	6.5
Metalworking Machy.	202.0	74.1	36.7	68.1	33.7	59.8	29.6	11.8	5.8
Machine Tools	49.2	12.6	25.7	14.4	29.2	22.2	45.1	3.4	6.9

NA - Not Available.

(a) Includes estimates of machines in plants with less than 20 employees.
(b) Machines 20 years old are included in the "Over 20 Years" category.

Source: McGraw Hill, Inc. "American Machinist," Inventories of Metalworking Equipment, 1963 - 1983.

MACHINE TOOLS IN USE IN SEVEN INDUSTRIAL NATIONS
By Number and Age
(Number in Thousands)

			Percent of Total		
Country	Year	Total	Under 10 Years	10–19 Years	20 Years & Up
United States	1983	2,193	32.7%	34.0%	33.2%
West Germany (a)	1980	1,250	34.0	18.0	48.0
United Kingdom (b)	1982	775	42.3	30.5	27.2
Japan(c)	1981	918	36.4	28.0	35.6
France	1980	761	35.0	33.0	32.0
Italy (d)	1975	541	38.1	33.9	28.0
Canada	1978	211	35.8	30.4	33.8

(a) Machine tool age classifications are as follows: Under 10 Years, 10 to 14 Years, 15 Years & Up.
(b) Machine tool age classifications are as follows: Under 6 Years, 6 to 19 Years, 20 Years & Up.
(c) Machine tool age classifications are as follows: Under 8 Years, 8 to 12 Years, 20 Years & Up.
(d) Machine tool age classifications are as follows: Under 9 Years, 9 to 17 Years, Over 17 Years.

Source: McGraw Hill, Inc. "American Machinist."

MACHINE TOOLS IN USE
Metalworking Industries, 1983
(Number in Thousands and Percent of Industry Total)

Industry	Total	By Age						With Numerical Control	
		Under 10 Years		10–19 Years		20 Years and Over			
		Number	%	Number	%	Number	%	Number	%
TOTAL	2,192.8	717.9	32.7	746.4	34.0	728.5	33.2	103.3	4.7
Metal Furniture, Fixtures	26.6	6.9	26.0	11.3	42.3	8.4	31.7	0.6	2.3
Primary Metals	117.8	34.4	29.2	39.6	33.6	43.8	37.2	2.7	2.3
Fabricated Metal Products	518.9	149.4	28.8	179.3	34.5	190.3	36.7	14.5	2.8
Fab. Structural Metal Product	120.3	41.7	34.7	42.1	35.0	36.5	30.3	4.3	3.6
Screw Machine Products	85.7	21.6	25.2	31.3	36.5	32.8	38.3	1.4	1.6
Metal Stampings	96.2	23.6	24.6	32.3	33.6	40.3	41.9	1.9	1.9
Other Fab. Metal Products	216.8	62.4	28.8	73.6	33.9	80.8	37.3	6.9	3.2
Non-Electrical Machinery	805.3	285.3	35.4	272.4	33.8	247.6	30.7	52.5	6.5
Metalworking Machinery	202.0	74.1	36.7	68.1	33.7	59.8	29.6	11.8	5.8
Machine Tools	49.2	12.6	25.7	14.4	29.2	22.2	45.1	3.4	6.9
Special Industry Machy.	80.4	24.1	29.9	27.1	33.8	29.2	36.3	4.0	5.0
General Industrial Machy.	110.0	31.9	29.0	39.5	35.9	38.6	35.1	5.8	5.3
Other Non-Elec. Machy.	412.9	155.3	37.6	137.6	33.3	120.0	29.1	30.9	7.5
Electrical Machinery	245.7	85.3	34.7	90.9	37.0	69.4	28.3	10.8	4.4
Elec. Industrial Apparatus	41.4	13.8	33.2	15.0	36.3	12.6	30.5	1.8	4.3
Communications Equipment	36.6	14.0	38.4	13.6	37.1	9.0	24.5	2.6	7.1
Other Elec. Machinery	167.7	57.5	34.3	62.3	37.2	47.8	28.5	6.4	3.8
Transportation Equipment	303.0	89.0	29.4	92.7	30.6	121.2	40.0	15.3	5.0
Motor Vehicles Equip.	153.2	38.9	25.4	46.8	30.5	67.6	44.1	4.1	2.7
Aircraft and Parts	97.7	34.2	35.0	33.3	34.1	30.2	30.9	8.8	9.0
Other Trans. Equip.	52.0	15.9	30.6	12.6	24.2	23.5	45.2	2.4	4.6
Precision Instruments	109.6	41.3	37.7	40.0	36.5	28.3	25.8	4.9	4.4
Misc. Mfg. Industries	65.9	26.2	39.7	20.2	30.7	19.5	29.6	2.1	3.2

Note: Individual items may not add to totals due to rounding.

Source: American Machinist, "The 13th American Machinist Inventory of Metalworking Equipment, 1983."

MACHINE TOOLS IN USE IN METALWORKING INDUSTRIES
By Major User Industry, 1983
(Number in Thousands)

Using Industry	Total Machine Tools		Metal Cutting Machines		Metal Forming Machines	
	Number	%	Number	% Under 10 Yrs. Old	Number	% Under 10 Yrs. Old
TOTAL	2,192.8	100.0%	1,702.8	34%	489.9	27%
Furniture & Fixtures	26.6	1.2%	10.8	34%	15.9	21%
Primary Metals Industries	117.8	5.4	88.5	30	29.3	29
Fabricated Metal Products	518.9	23.7	326.0	32	192.9	25
Ordnance & Accessories	24.3	1.1	20.7	20	3.7	18
Non-Electrical Machinery	805.3	36.7	714.8	36	90.5	30
Electrical Machy. & Equipment	245.7	11.2	177.9	36	67.7	31
Transportation Equipment	303.0	13.8	248.6	30	54.4	27
Precision Instruments	109.6	5.0	91.3	38	18.3	33
Miscellaneous Mfg. Industries	65.9	3.0	45.0	47	20.9	23

Source: American Machinist, "13th Inventory of Metalworking Equipment, 1983."

GEOGRAPHICAL DISTRIBUTION OF MACHINE TOOLS IN USE IN METALWORKING INDUSTRIES, 1983

(By Number and Age Distribution)

	Metal Cutting Machines					Metal Forming Machines					No. Units with NC		% Plants with NC		
Region and Area	Total Units	0–4 Years	5–9 Years	10–19 Years	20 Years & Over	Total Units	0–4 Years	5–9 Years	10–19 Years	20 Years & Over	Cutting	Forming	Turning	Mach. ctrs.	Punching
U.S.A.	1,702,833	14%	20%	34%	32%	489,921	9%	18%	36%	37%	94,012	9,296	26%	19%	8%
NORTHEAST															
Boston	101,472	15%	21%	33%	32%	27,531	9%	18%	34%	39%	5,641	504	28%	20%	8%
Bridgeport-Hartford	67,581	14	18	34	34	16,389	9	17	36	39	3,893	197	28	24	3
New York-Newark	120,299	15	22	35	28	38,954	10	18	37	35	6,707	936	18	16	6
Buffalo-Syracuse	49,202	12	18	33	37	11,713	9	17	34	41	2,375	154	31	23	10
Philadelphia-Camden	77,535	14	21	34	32	25,286	9	18	35	37	4,057	490	28	19	8
Pittsburgh-Wheeling	47,239	12	20	33	35	13,634	7	16	33	44	2,390	192	31	23	7
SOUTHEAST															
Baltimore	14,065	13	20	34	34	4,212	8	18	35	39	592	86	23	14	14
Richmond	61,169	14	19	35	32	17,231	9	18	38	35	3,340	352	32	23	11
Atlanta-New Orleans	112,738	15	20	33	32	36,520	10	18	36	35	6,362	866	22	13	8
MIDWEST															
Cleveland	75,272	13	19	34	34	21,717	8	17	35	40	3,827	269	27	18	5
Toledo	21,624	10	17	32	40	6,632	7	15	36	42	841	55	27	18	10
Cincinnati-Louisville	57,956	13	19	34	35	16,496	8	16	37	39	2,868	241	29	22	9
Detroit	106,983	13	18	32	37	27,936	8	16	34	42	5,134	319	24	18	3
Indianapolis	45,936	12	18	34	36	14,234	8	16	34	41	1,920	190	28	13	5
Chicago	218,646	13	20	34	32	68,100	9	18	36	37	12,336	1,333	23	16	9
Milwaukee	60,777	12	19	34	35	15,879	8	18	36	38	3,210	260	26	21	9
Minneapolis-St. Paul	34,421	13	21	35	31	9,613	9	18	37	36	1,703	189	31	21	11
St. Louis	49,624	13	20	35	33	18,373	9	17	37	37	1,979	295	21	14	10
SOUTHWEST															
Kansas City - Tulsa	41,236	16	21	32	31	10,470	10	19	35	36	2,677	220	39	27	10
Dallas-Houston	79,137	18	21	31	30	19,848	12	19	35	34	6,110	473	35	20	7
MOUNTAIN AND PACIFIC															
Denver	32,34[illegible]	15	22	33	30	8,829	10	19	35	36	1,742	238	23	18	12
Seattle-Portland	27,619	15	22	33	31	6,906	11	19	36	34	1,388	155	20	17	6
San Francisco	44,65[illegible]	16	21	33	29	11,817	11	19	37	33	2,504	292	18	16	9
Los Angeles	155,311	17	22	34	28	41,571	11	19	37	33	10,416	990	28	21	7

Source: American Machinist, "13th Inventory of Metalworking Equipment, 1983."

MACHINE TOOLS IN USE IN METALWORKING INDUSTRIES

By Major Type and Age, 1983

Type of Machine Tool	Plants With	Total Units	Change Since '78	Percent of Total	0–4 Years	5–9 Years	10–19 Years	20 Years and Over
GRAND TOTAL	—	2,192,754	−8%	100.0%	13%	20%	34%	33%
Non-NC Grinding Machines	75%	383,027	0%	17.5%	14%	22%	34%	31%
Non-NC Turning Machines	77	332,327	−14	15.2	10	16	35	40
Non-NC Drilling Machines	74	281,453	−18	12.8	10	18	36	36
Non-NC Milling Machines	74	218,479	−5	10.0	12	20	36	32
Mechanical Presses	43	198,973	−15	9.1	6	14	36	45
Cutoff & Sawing Machines	86	169,107	5	7.7	17	28	33	22
Non-NC Bending & Forming	41	77,285	2	3.5	11	19	38	32
Non-NC Punching & Shearing	41	66,363	9	3.0	11	20	37	32
Hydraulic Presses	38	53,292	−5	2.4	14	22	34	30
Honing, Lapping, Polishing	33	50,626	NA	2.3	12	23	35	30
Non-NC Boring Machines	28	40,462	−17	1.8	8	11	34	47
Gear-cutting & -finishing	10	34,834	−11	1.6	7	11	32	50
NC Turning Machines	26	33,352	236	1.5	58	28	11	3
Tapping Machines	24	28,139	1	1.3	13	25	36	26
Machining Centers	19	24,003	26	1.1	58	26	15	1
Forging Machines	6	19,613	−4	0.9	6	11	30	54
Pneumatic Presses	8	17,656	NA	0.8	18	30	37	16
Broaching Machines	18	16,505	20	0.8	11	15	29	45
NC Milling Machines	16	15,929	209	0.7	44	27	22	6
Station-Type Machines	5	13,588	−25	0.6	16	20	32	31
Electrical-Machining Units	14	12,434	9	0.6	31	28	35	6
Other Non-NC Metal Cutting	4	12,075	NA	0.6	12	18	37	34
Threading Machines	13	11,703	−5	0.5	8	17	37	38
Other Non-NC Metalforming	3	11,255	−67	0.5	6	18	36	40
Coil-Processing Systems	6	10,852	−78	0.5	13	25	35	27
Thread-Rolling Machines	5	8,604	36	0.4	9	17	31	43
Diecasting Machines	2	8,095	−21	0.4	12	24	44	20
NC Drilling Machines	9	7,993	134	0.4	21	29	43	8
Multiple-Side Forming Mach.	2	7,003	−45	0.3	7	21	35	38
NC Punching & Shearing	8	6,223	277	0.3	37	29	26	8
Non-NC Thermal Cutting	8	5,302	−61	0.2	28	33	26	14
NC Boring Machines	7	5,064	68	0.2	29	22	33	17
Other NC Metalcutting	2	3,121	652	0.1	19	25	13	43
NC Bending & Forming	3	2,585	21	0.1	33	26	27	15
NC Grinding Machines	3	2,276	734	0.1	50	21	22	7
Sheet-, Plate-processing	2	1,634	NA	0.1	15	25	24	37
NC Thermal Cutting	3	1,034	NA	0.1	53	29	8	9
Other NC Metalforming	(a)	488	75	(b)	47	18	22	14

NA - Not Available.

(a) Percentage is less than 1%.
(b) Percentage is less than 0.1%.

Source: American Machinist, "13th Inventory of Metalworking Equipment, 1983."

NUMERICALLY CONTROLLED MACHINE TOOLS IN USE IN METALWORKING INDUSTRIES

Number by Type of Machine and User Industry, 1983

Using Industry	Metal Cutting Total	Metal Cutting Turn	Metal Cutting Bore	Metal Cutting Drill	Metal Cutting Mill	Metal Cutting Machining Centers	Metal Forming Total
TOTAL	94,012	33,352	5,064	7,993	15,929	24,003	9,296
Metal Furniture and Fixtures	253	46	19	58	43	23	357
Primary Metals Industries	2,413	842	271	261	433	353	249
Fabricated Metal Products	10,841	4,348	500	1,121	1,676	1,652	3,622
Ordnance and Accessories	797	NA	NA	NA	NA	NA	16
Non-Electrical Machinery	50,698	18,592	2,935	4,205	7,876	13,917	1,843
Metalworking Machinery	11,713	2,716	858	1,136	2,410	3,005	85
Machine Tools	3,373	956	355	400	355	1,103	31
Special Industry Machinery	3,903	1,115	219	559	563	1,314	134
Electrical Machinery and Equipment	9,415	2,677	182	1,150	1,983	2,644	1,357
Transportation Equipment	14,397	4,922	907	718	2,145	4,127	887
Aircraft Engines and Parts	8,450	2,790	426	336	1,692	2,810	332
Precision Instruments	4,434	1,538	110	227	1,132	1,240	440
Miscellaneous Manufacturing Industries	1,561	387	140	253	641	47	541

NA - Not Available.

Source: American Machinist, "13th Inventory of Metalworking Equipment, 1983."

SEPTEMBER 7–15, 1988 CHICAGO, IL U.S.A.

IMTS

The world of manufacturing technology

1988 INTERNATIONAL MACHINE TOOL SHOW

The International Machine Tool Show is an international exchange of ideas for greater productivity and efficiency. Held in Chicago during September of every even numbered year, IMTS features every type of equipment and accessory, from sophisticated computer and numerical controlled systems to standard shop equipment.

Most of all, IMTS is the "World of Manufacturing Technology," representing the best opportunity for metalworking people to stay abreast of the latest developments in the industry. If metalworking is your profession, IMTS is the most important trade show you can attend.

Sponsored by: nm tba national machine tool builders association

Abbreviations

and

Explanation of Terms

ABBREVIATIONS

ADR — The Asset Depreciation Range System
BEA — Bureau of Economic Analysis
BLS — Bureau of Labor Statistics
BTN — Brussels Tariff Nomenclature
CCC — Customs Co-Operation Council
CECIMO — Comité Européen de Coopération des Industries de la Machine Outil
C.I.F. — Cost, Insurance and Freight. Under these terms, the seller quotes a price which includes the cost of the goods, marine insurance and the transportation charges to a specified point of destination.
D — Withheld to avoid disclosing figures for individual companies
E — Estimate
EEC — European Economic Community
F.A.S. — Free Alongside Ship. Prices specified under these export terms provide that the seller delivers the goods to be exported alongside the overseas vessel within reach of its loading equipment.
F.O.B. — Free on Board. Seller is required to place goods aboard the equipment of the transporting carrier without cost to the buyer. The term F.O.B. must be qualified by a name destination.
FTC — Federal Trade Commission
GNP — Gross National Product
ILO — International Labor Organization
ITC — International Trade Commission
NA — Not Available
NC — Numerically Controlled
NEC — Not Elsewhere Classified
NMTBA — National Machine Tool Builders' Association
P — Preliminary
R — Revised
S — Estimate did not meet Publication Standards
SEC — Securities and Exchange Commission
S.I.C. — Standard Industrial Classification
SITC — Standard International Trade Classification of the United Nations
TSUSA — Tariff Schedules of the U.S., Annotated
U.N. — United Nations
VDMA — Verein Deutscher Maschinenbauanstalten
VDW — Fachgemeinschaft Werkzeugmaschinen in VDMA
Z — Figure below the Minimum Unit of Measure Selected

EXPLANATION OF TERMS

ACCESSIONS
........See LABOR TURNOVER

AIRCRAFT, MISSILES AND PARTS
........Industry Group, conforming to the Standard Industrial Classification. Consists of Industry Group, SIC 372, Aircraft and Parts, and SIC 376, Establishments Primarily Engaged in Manufacturing Complete Guided Missiles and Space Vehicles and Parts.

ASSETS, NET
........Total net assets are the sum of all recorded assets after reducing such amount by allowance or reserve for bad debts, depreciation and amortization, but before deducting any liabilities, mortgages or other indebtedness.

AVERAGE HOURLY EARNINGS
........See EARNINGS

AVERAGE STRAIGHT-TIME HOURLY EARNINGS
........See EARNINGS

AVERAGE WEEKLY HOURS
........See HOURS, AVERAGE WEEKLY

AVERAGE WEEKLY EARNINGS
........See EARNINGS

BACKLOG
........See ORDERS, UNFILLED

CANCELLATIONS
........Gross new orders less cancellations equal net new orders in the order data of NMTBA. Cancellation provisions are usually specified in purchase orders.

CAPACITY UTILIZATION
........There are seven different series on capacity utilization. The most widely used are the indexes published by the Federal Reserve Board, the U.S. Department of Commerce's Bureau of Economic Analysis and McGraw-Hill Publications. Though their statistical methodology varies, each of these indexes attempts to present a measure of current physical industrial output levels as they compare to the potential level of output if all available productive facilities were in full use. Some series measure utilization according to absolute output potential while others measure utilization relative to that portion of absolute capacity which management prefers. While these differences lead to divergent index numbers, quite often the relative changes of the different indexes parallel each other.

CAPITAL EXPENDITURES
........See PLANT AND EQUIPMENT

CAPITAL GOOD INDUSTRIES
........This category is defined as the Nonelectrical Machinery industry, exclusive of farm machinery and equipment producers and machinery shops, the Electrical Machinery Industry, exclusive of household appliances and electronic components manufacturers, and the non-defense portion of the following industries: Shipbuilding and Repairing, Railroad Equipment, Communication Equipment, Aircraft and Parts, and Ordnance plus Defense Products.

COMPENSATION
........See EARNINGS; PAYROLL

COMPENSATION, SUPPLEMENTARY
........Supplementary compensation statistics fall into two broad categories and are intended to capture

payroll expenditures made by employers which are in addition to the stated hourly wage rate. These categories are:

1. Payments to Workers—which includes payments for paid leave time, premiums for overtime, weekend, holiday, and shift work; non-production bonuses (e.g., Christmas); and terminal payments.
2. Expenditures in Addition to Payroll—which encompass expenditures for which the employer irrevocably makes a payment under the provisions of a legally required insurance program or private welfare plan; e.g., social security, unemployment compensation and other insurance for the benefit of the workers; life, accident, and health insurance; pension and retirement plans; vacation and holiday funds; severance and supplemental unemployment benefit plans; and savings and thrift plans.

For further explanation, see the "BLS Handbook of Methods, U.S. Bureau of Labor Statistics, Bulletin 1910."

CONSTANT DOLLARS

........Constant dollar estimates represent an effort to remove the effects of price changes from statistical series. In general, they are arrived at by dividing current dollar estimates by appropriate price indexes.

Any changes in such a series would reflect only changes in the "real" (physical) volume of output.

........See IMPLICIT PRICE DEFLATOR.

CONSUMER PRICE INDEX

........See PRICE INDEX

CONSUMPTION

........The term consumption, as used in this publication, refers to the domestic production, less exports, plus imports of a particular commodity.

CONTROLS

........See NUMERICAL CONTROLS

CORPORATE CAPITAL CONSUMPTION ALLOWANCES

........Accounting charges which reflect estimates of wear and tear, obsolescence, destruction, and accidental losses of physical capital.

Gross National Product less capital consumption allowances is referred to as Net National Product.

COST OF MATERIALS

........See MATERIALS, COST OF

DEFENSE PRODUCTS

........The "defense products" category for manufacturers' shipments, orders, and inventories consists of communication equipment, complete aircraft and parts, shipbuilding and military tank vehicles and ordnance. See Census Bureau, Current Industrial Report, Series: M3-1 and MA-175 Shipments of Defense-oriented Industries.

DEPRECIATION

........Depreciation is the general conversion of the depreciable cost of a fixed asset into expense, spread over its remaining life. There are numerous depreciation methods, all based on a periodic charge to an expense account and a corresponding credit to a depreciation reserve.

Plant (Structure and Additions) depreciation and amortization are usually reported separately from machinery and equipment depreciation.

DIFFERENTIAL (SHIFT)

........Shift differentials represent premium payments for work on late or night shifts. They are part of Supplementary Compensation (See COMPENSATION, SUPPLEMENTARY) paid to workers.

DOMESTIC (ORDERS, SHIPMENTS, UNFILLED ORDERS, CANCELLATIONS)

........Totals are the sum of "domestic" and "foreign." "Domestic" represents business activity originating within or destined for the United States, its territories and possessions.

DURABLE GOODS

........An item, destined for either producers or consumers, that in normal use is likely to last longer than three years. Consumer durable goods include automobiles, appliances, jewelry and books. Producer durable goods include a wide range of machinery and equipment.

DURABLE GOODS INDUSTRIES

........Comprise manufacturing major industry groups with SIC Codes 24, 25, and 32 through 38. All other manufacturing major industry groups in SIC Codes 20 through 38 are considered as nondurable goods manufacturing industry groups.

EARNINGS

........Earnings are the actual return to the worker for a stated period of time. Irregular bonuses, retroactive items, payments of various welfare benefits, payroll taxes paid by employers are excluded.

..........AVERAGE HOURLY EARNINGS

........are on a "gross" basis, reflecting not only changes in basic hourly and incentive wage rates, but also such variable factors as premium pay for overtime and late shift work, and changes in output of workers paid on an incentive plan.

..........AVERAGE STRAIGHT-TIME HOURLY EARNINGS

........exclude premium payments for overtime and for work on weekends, holidays, and late shifts. Regular day-shift wages or salaries paid per hour worked during a standard workweek are included; incentive pay, production bonuses, and cost of living payments are included in these statistics, Non-production bonuses are excluded.

.........AVERAGE WEEKLY EARNINGS

........are derived by multiplying average weekly hours by hourly earnings.

ELECTRICAL MACHINERY INDUSTRY

........Major Group 36, Electrical Machinery, Equipment and Supplies, according to the Standard Industrial Classification, comprises SIC Industry Groups:

..........361. Electrical Transmission and Distribution Equipment
362. Electrical Industrial Apparatus
363. Household Appliances
364. Electrical Lighting and Wiring Equipment
365. Radio and Television Receiving Sets
366. Communication Equipment
367. Electronic Components and Accessories
369. Miscellaneous Electrical Machinery, Equipment and Supplies

EQUITY

........See STOCKHOLDER'S EQUITY

ESTABLISHMENT

........The "establishment" is the basis for reporting to the Census of Manufactures. It is an operating facility in a single location. Where one facility engages in different lines of activity, it is required to submit separate reports, provided that plant records permit such a separation and the activities are substantial in size.

EXCHANGE RATES

........An exchange rate is nothing more than the purchase price of a unit of one nation's currency expressed in terms of another nation's currency. The exchange rates cited in this text are the market rates published by the International Monetary Fund.

EXPENDITURES ON NEW PLANT AND EQUIPMENT

........See PLANT AND EQUIPMENT

EXPORTS

........EXPORTS OF DOMESTIC MERCHANDISE—TOTAL

.........Data are compiled from copies of Shippers' Export Declarations filed with U.S. Customs officials. Export values are those declared by the shipper at the time of exportation. Values of containers and coverings are included. Freight, insurance and other changes to the point of export are included, but freight and other charges from the place of departure in the United States to the destination in the foreign country are not.

A description of the procedures used for compiling these statistics appears in Report FT 410, United States Exports, Commodity by Country, published by the U.S. Bureau of the Census.

MANUFACTURERS' EXPORT SHIPMENTS

........These data are based on manufacturers' factory shipments for exports. For machine tools the value figures represent the manufacturers' selling price, F.O.B. factory, of complete machines as shipped, including all accessories, attachments, and numerical controls that are ordered and shipped with the machines. Rebuilt machinery, machine tools designed for use in home workshops, laboratories, garages, service shops, or for modelmaking are excluded.

FROM FOREIGN COUNTRIES

........Export statistics supplied by the United Nations and foreign countries are defined by the originating agency and may not be comparable to U.S. definitions.

........The International Trade Statistics Center, Statistical Office of the United Nations prepares some special data on the U.S. share of exports from fourteen supplier countries to the world and to 90 countries of destination. The definition of machine tools for this series is the Standard International Trade Classification, Revised (SITC) of the United Nations, SITC NO. 715.1, Machine Tools for Working Metals. (See MARKET SHARE).

Exports are value F.O.B. port of shipment by all reporting countries, except Canada which values exports F.O.B. inland point of shipment and the United States which values exports F.A.S.

U.S. and U.K. data refer to exports of domestic merchandise; data for Denmark, Japan, Norway and Sweden are for exports including re-exports; Canadian data are for general exports.

The table on "Machine Tool Exports from 14 Supplier Countries to the U.S." appearing in this text is based on the U.N. figures.

The special tables on German, British, Italian and Japanese foreign trade data are based on statistics prepared in those countries.

NOTE:

The definition of "Exports of Domestic Merchandise—Total" is broader than the definition of "Manufacturers' Export Shipments." Exports in the first category should, therefore, be larger than those in the second category. While this generally is the case, it is not always the case. In certain classifications, manufacturers' export shipments in some years exceed total exports of domestic merchandise. The reasons for this may lie in differences in the time of reporting, difference in classifying certain machine tools, and, possibly, in errors of classification on Shippers Export Declarations.

Differences will also be noted between U.S. exports to a foreign country and the imports from the U.S. reported by that country for the same year. The reverse also occurs—U.S. imports from a given country may differ from the exports to the U.S. reported for the same year by that country.

This may be due to differences in the time the exports and imports were reported, differences in determining values, differences in the classification of commodities, differences in conversion of currencies, and errors in classification or computation.

FABRICATED METAL PRODUCTS INDUSTRY

........The Production Indexes published in this book appear as compiled by the Board of Governors of the Federal Reserve System.

........See INDUSTRIAL PRODUCTION

........in all other tables consists of SIC Major Group 34, Fabricated Metal Products except Machinery and Transportation Equipment. The SIC Industry Groups included are:

........341. Metal Cans
342. Cutlery, Hand Tools, and General Hardware
343. Heating Equipment (except electrical) and Plumbing Fixtures
344. Fabricated Structural Metal Products
345. Screw Machine Products, and Bolts, Nuts, Screws, Rivets and Washers
346. Metal Stampings
347. Coating, Engraving and Allied Services
348. Ordnance and Accessories
349. Miscellaneous Fabricated Metal Products.

FOREIGN (ORDERS, SHIPMENTS, UNFILLED ORDERS, CANCELLATIONS)

........"Totals" are the sum of "domestic" and "foreign." "Foreign" represents all business activity destined for other than the United States, its territories or possessions.

FOREIGN INVESTMENT, DIRECT U.S.

........Direct U.S. foreign investment consists of net capital outflows from the U.S. into businesses in which U.S. residents have significant control. Reinvested returns of the foreign investment are included in these data but portfolio holdings of foreign securities are excluded.

FOREIGN TRADE

........See EXPORTS; IMPORTS

FRINGE BENEFITS

........See COMPENSATION, SUPPLEMENTARY

FURNITURE AND FIXTURE INDUSTRY

........Major Group 25, Furniture and Fixtures, according to the Standard Industrial Classification, comprises SIC Industry Groups:

........251. Household Furniture
252. Office Furniture
253. Public Buildings and Related Furniture
254. Partitions, Shelving, Lockers, and Office and Store Fixtures
259. Miscellaneous Furniture and Fixtures.

GNP—GROSS NATIONAL PRODUCT

........Gross National Product or expenditure is the market value of the output of goods and services produced by the nation's economy before deduction of depreciation charges and other allowances for business and institutional consumption of durable goods.

Gross national product comprises the purchase of goods and services by consumers and government, gross private domestic investment, and net exports. Beginning with 1960, the estimates include data for Alaska and Hawaii.

GROSS NEW ORDERS

........SEE ORDERS

GROSS PRIVATE DOMESTIC INVESTMENT

........Consists of fixed investment and change in business inventories. Fixed investment measures additions to, and replacements of, private capital brought about through net acquisitions by businesses and non-profit institutions of durable equipment and structures for business and residential purposes.

HEALTH, INSURANCE AND RETIREMENT PLANS

........See COMPENSATION, SUPPLEMENTARY

HOLIDAYS, PAID

........See COMPENSATION, SUPPLEMENTARY

HOURS, AVERAGE WEEKLY

........These statistics are derived by dividing the total of all hours worked in a reporting establishment or industry, including overtime, by the number of employees who received remuneration for their work. Such data differs from standard or scheduled hours.

HOURS, OVERTIME

........Overtime hours represent that portion of the gross average weekly hours which were in excess of regular hours and for which premium payments were made.

Overtime hours are premium hours by definition.

HOURS, SCHEDULED, WEEKLY

........Refers to the predominant work schedule for full-time production workers employed on the day shift.

IMPLICIT PRICE DEFLATOR

........The implicit price deflator is the price index for gross national product. It is a weighted average of the price indexes used to deflate the components of GNP. The implicit weights used are expenditures in the current period. The implicit price index is generally regarded as the best single measure of broad price movement in the economy as a whole.

IMPORTS

........Imports are classified as "general imports" or "imports for consumption." In this volume, we generally speak of "imports for consumption." These are entries for immediate consumption plus merchandise withdrawn from bonded storage warehouses for consumption.

IMPORTS INTO THE UNITED STATES

........Data are compiled from Import Entries filed with U.S. Customs officials. Import values are in general based on the market value or price in the foreign country at the time of exportation of such merchandise. These values include the cost of containers and coverings, as well as other charges and expenses incidental to placing the merchandise in condition, packed ready for shipment to the United States, but exclude import duties, insurance, ocean freight and other charges incidental to arrival of the goods in the United States. The foreign values of imported merchandise are converted into U.S. currency at the rate of exchange prevailing on the day the merchandise is shipped to the United States (but the same rate of exchange may be used for each currency for a 3-month period so long as the rate on any particular day did not vary from it by 5 percent or more).

........Machine tool import data includes used and rebuilt machine tools, replacement parts and home workshop tools. Also included may be some metalworking machinery other than machine tools.

Because the SIC and the statistical export and import classifications were developed independently, there are considerable difficulties in meshing the three systems. Many adjustments are required for comparability. The Census Bureau has published several imports in which comparability is attempted. Among these are annual volumes on U.S. Commodity Exports as Related to Output, U.S. Imports for Consumption and General Imports, SIC-Based Product Classification, by Area, FT 210, and U.S. Exports of Domestic Merchandise, SIC-Based Products and Area, FT 610.

A description of the procedures for compiling import statistics appears in Report FT 135, U. S. Imports, General and Consumption, Schedule A, Commodity and Country, published by the U.S. Bureau of the Census.

IMPORTS INTO FOREIGN COUNTRIES

........The separate tables on German, British, Italian, and Japanese foreign trade data are based on statistics prepared in those countries.

NOTE:

Differences will be noted between U.S. imports from a foreign country and the exports to the U.S. from that country for the same year. The reverse also occurs—U.S. exports to a given country may differ from the imports from the U.S. reported by that country for the same year. These differences may be due to differences in the time the imports and exports were reported, differences in determining values, differences in classification of commodities, differences in the conversion of currencies, and errors in classification or computation.

INCOME

........NET OPERATING INCOME.

........is total net sales less total operating costs.

NET INCOME (Before Income Taxes).

........is Net Operating Income plus or minus "Other Income and Expense."

OTHER INCOME AND EXPENSE.

........includes interest, income, royalty income, capital gains and losses, interest expense, cash discounts, etc.

NET INCOME (After Income Taxes).

........equals Net Income (Before Income Taxes) less all income taxes.

INDUSTRIAL PRODUCTION, TOTAL

........A measure of the physical output of U.S. manufacturing, mining, and utility industries compiled monthly by the Board of Governors of the Federal Reserve System. Covering about 35% of the total U.S. output of goods and services, the index includes a representative group of products, ranging from pig iron and cotton yarn to machine tools and electricity. It excludes agriculture, construction, and service industries. The relative importance assigned to individual products is based on quantity and value data determined from recent government censuses. Manufacturing accounts for 88.55% of the index, mineral production for 6.37%, and utilities for 5.08%. Current output is expressed as a percentage of annual production levels during 1967.

INSTRUMENTS AND RELATED PRODUCTS

........Major Group 38. Measuring, Analyzing and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks, according to the Standard Industrial Classification, comprises SIC Industry Groups.

........381. Engineering, Laboratory, Scientific and Research Instruments and Associated Equipment
382. Measuring and Controlling Instruments
383. Optical Instruments and Lenses
384. Surgical, Medical, and Dental Instruments and Supplies
385. Ophthalmic Goods
386. Photographic Equipment and Supplies
387. Watches, Clocks, Clockwork Operated Devices, and Parts

INVENTORIES

........End of month stocks of manufacturing establishments regardless of stage of fabrication. These inventories are valued at cost in the economic and statistical indicators, but are valued at current prices in the National Income and Product Accounts (which measure change in business inventories).

LABOR TURNOVER

........Labor turnover is the gross movement of wage and salary workers into and out of employed status with respect to individual establishments. This movement, which relates to a calendar month, is divided into two broad types: accessions (new hires and rehires) and separations (terminations of employment initiated by either employer or employee). Data for each type of action is accumulated for a calendar month and expressed as a rate per 100 employees. The data relate to all employees, whether full- or part-time, permanent or temporary, including executive, office, sales, other salaried personnel and production workers.

ACCESSIONS

........are the total number of permanent and temporary additions to the employment roll including both new and rehired employees.

NEW HIRES

........are temporary or permanent additions to the employment roll of persons who have never before been employed in the establishment.

OTHER ACCESSIONS

........which are not published separately but are included in total accessions, are all additions to the employment roll which are not classified as new hires.

SEPARATIONS

........are terminations of employment during the calendar month and are classified according to cause, quits, layoffs, and other separations, as defined below.

........QUITS

....are terminations of employment initiated by employees, failure to report after being hired, and unauthorized absences.

LAYOFFS

....are suspensions without pay lasting or expected to last more than 7 consecutive calendar days, initiated by the employer without prejudice to the worker.

OTHER SEPARATIONS

....are terminations of employment because of discharge, permanent disability, death, retirement, etc.

LAYOFFS

........See LABOR TURNOVER.

LEADING INDICATORS

........A set of economic time series, each of which usually reaches business cycle peaks and troughs ahead of general economic activity. While there are forty distinctly recognized leading indicators, only 12 are included in the widely publicized "Composite Index of Leading Indicators".

MACHINE TOOL INDUSTRY

........The machine tool industry covers establishments primarily engaged in producing metal cutting type machine tools and metal forming type machine tools. The U.S. Bureau of the Census has assigned industry SIC codes 3541 and 3542 to these industries.

An establishment is primarily engaged in the machine tool industry if the value of machine tools produced exceeds in value the production of products of other industries.

Because many establishments classified as being within the machine tool industry produce not only machine tools (their "primary products") but also other products (their "secondary products"), the "machine tool industry" figures do not measure machine tool activities only. In 1972, for instance, only 86 per cent of the value of shipments of the "metal cutting machine tool industry" consisted of metal cutting machine tools. The most important other products shipped were machine tool accessories and measuring devices.

While not all the shipments of the machine tool industry were made up of machine tools, some other industries did produce machine tools as their "secondary products." The 1972 Census of Manufactures showed that 90 per cent of all metal cutting machine tools were produced by the "metal cutting machine tool industry." The remaining 10 per cent were shipped by other industries. The "machine tool industry" statistics are important because they permit a measurement of the economic status of the plants which make machine tools their major business—their location, employment, payroll, etc. They are less reliable if we want to measure total machine tool production and shipments. To get the facts on total machine tool production, we should look at "Shipments"—see separate entry.

MACHINE TOOL PRODUCTS
........See SHIPMENTS

MACHINE TOOL SHIPMENTS
........See SHIPMENTS

MACHINE TOOLS, COMPLETE
........Machine tools (See MACHINE TOOLS, DEFINITION) as shipped, including all accessories, attachments, and numerical controls that are ordered and shipped with the machines.

MACHINE TOOLS, DEFINITION
........Machine tools are either metal cutting machines or metal forming machines.

METAL CUTTING TYPES
........of machine tools are power driven machines, not supported in the hands of an operator when in use, that shape metal by cutting or use of electrical techniques. Machine tools of the metal cutting type are classified under SIC product codes, the first four digits of which are 3541.

METAL FORMING TYPES
........of machine tools are power driven machines, not supported in the hands of an operator while in use, for pressing, forging, hammering, extruding, shearing, bending or die casting metal into shape. Machine tools of the metal forming type are classified under SIC product codes, the first four digits of which are 3542.

MACHINERY, EXCEPT ELECTRICAL
........See NONELECTRICAL MACHINERY

MACHINERY AND EQUIPMENT INDUSTRIES
........are classified as a supplementary market category for manufacturers' orders, inventories and shipments. The other categories are "consumer durables" and "defense products." (See separate item—DEFENSE.)

........MACHINERY AND EQUIPMENT INDUSTRIES CATEGORY, consists of,
....nonelectrical machinery
....See NONELECTRICAL MACHINERY, but excluding farm machinery and machine shops; electrical machinery
....See ELECTRICAL MACHINERY, but excluding household appliances, communication equipment and electronic components; shipbuilding and repairing; and railroad and streetcar equipment.

MAJOR USERS—MAJOR USER CATEGORIES
........The major users of machine tools are the nonelectrical machinery industry, the fabricated metal products industry, the electrical machinery and equipment industry and other industry groups (see individual industry groups) listed in the inventory section of this volume.

MAN-HOURS
........All plant man-hours of production and related workers. Represents all man-hours worked or paid

for including actual overtime hours. Excludes hours paid for vacation, holidays or sick leave when the employee was not at the plant.

MANUFACTURERS' EXPORT SHIPMENTS
........See EXPORTS

MANUFACTURERS' NEW ORDERS
........See ORDERS

MANUFACTURERS' SHIPMENTS
........See SHIPMENTS

MARKET CATEGORY
........Major User Categories are classified either by Industry Group or by Market Category.
  ....See MAJOR USERS, DEFENSE, and MACHINERY AND EOUIPMENT INDUSTRIES

MARKET SHARE:
........Market Share defines what portion of a country's total imports of a specific commodity are attributable to a specific country of origin. The table in Chapter 6 of this text details this data for machine tool exports from the major Western industrial nations.

MATERIALS, COST OF
........"Cost" is defined as the direct charges actually paid or payable for items consumed or put into production during one year, after discounts, and including freight charges and other direct charges incurred by the establishment in acquiring the materials.

........Cost of materials includes:
  ....the total delivered cost of all raw materials, semi-finished goods, parts, components, containers, scrap, and supplies consumed or put into production during the year:
  ....the amount paid for electric energy purchased;
  ....the amount paid for all fuels consumed for heat, power, or the generation of electricity;
  ....the cost of work done by others on materials or parts furnished by manufacturing establishments (contract work);
  ....the cost of products bought and resold in the same condition.
    ....cost of materials excludes the cost of services used, such as,
    ....advertising, insurance, telephone, etc.;
  ....research development, and consulting services;
  ....overhead costs, such as depreciation charges, rent, interest, royalties, etc.;
  ....expense items chargeable to fixed asset accounts.

METAL FORMING
........See MACHINE TOOLS

METAL CUTTING
........See MACHINE TOOLS

METALWORKING INDUSTRY
........Industry Group 354, Metalworking Machinery and Equipment according to the Standard Industrial Classification. This industry group comprises the following industries,
  ....3541. Machine Tools, Metal Cutting Types
  3542. Machine Tools, Metal Forming Types
  3544. Special Dies and Tools, Die Sets, Jigs and Fixtures
  3545. Machine Tool Accessories and Measuring Devices
  3546. Power Driven Hand Tools
  3547. Rolling Mill Machinery and Equipment
  3549. Metalworking Machinery, N.E.C.

MOTOR VEHICLES AND PARTS INDUSTRY
........Industry Group 371. Motor Vehicles and Motor Vehicle Equipment, according to the Standard Industrial Classification, comprises the following industries.
  3711. Motor Vehicles
  3712. Passenger Car Bodies
  3713. Truck and Bus Bodies
  3714. Motor Vehicle Parts and Accessories
  3715. Truck Trailers (Full)

NC
........See NUMERICAL CONTROLS

NET ASSETS
........See ASSETS, NET

NET INCOME
........See INCOME

NET NEW ORDERS
........See ORDERS

NET OPERATING PROFIT
........See INCOME

NET PROFIT ON SALES
........See INCOME

NET SALES
........See SALES

NEW HIRES
........See LABOR TURNOVER

NONELECTRICAL MACHINERY INDUSTRY
........Major Group 35, Machinery, except Electrical, according to the Standard Industrial Classification, comprises,

........351. Engines and Turbines
352. Farm Machinery and Equipment
353. Construction, Mining, and Materials Handling Machinery and Equipment
354. Metalworking Machinery and Equipment
355. Special Industry Machinery, Except Metalworking Machinery
356. General Industrial Machinery and Equipment
357. Office, Computing, and Accounting Machines
358. Refrigeration and Service Industry Machinery
359. Miscellaneous Machinery, Except Electrical

NUMERICAL CONTROLS
........Machine tool control systems which operate a machine by means of numerically coded programs inserted or fed into the systems on tape, punched cards, dials, plugs, preset switches or by playback of prerecorded operating programs.

OPERATING PROFIT
........See INCOME, NET OPERATING

ORDERS
........CENSUS SERIES ON SHIPMENTS, INVENTORIES AND ORDERS

........NEW ORDERS, NET,

....represent gross new orders net of cancellations received during the period. The series of new orders is adjusted for the number of trading days and length of calendar month prior to seasonal adjustment.

UNFILLED ORDERS

....at the end of a reporting period are orders that have not passed through the sales account and are equal to unfilled orders at the beginning of the period plus net new orders received during the period less net sales. Estimates for unfilled orders are obtained for each detailed category by multiplying the estimate for the preceding month by the link relatives based on a matched sample of reporting companies. The data for each company are inflated by their sampling weights before being summarized.

........NMTBA SERIES ON NEW ORDERS AND SHIPMENTS

........GROSS NEW ORDERS, minus CANCELLATIONS, equal NET NEW ORDERS

....The data are collected from participating companies and expanded to industry totals. The totals are adjusted periodically to benchmarks provided by the MQ-35W (See separate entry—SHIPMENTS—COMPLETE MACHINE TOOLS—MQ-35W) for metal cutting and metal forming.

NMTBA data include only complete new machine tools and the accessories, attachments and tools ordered with them. They include only orders for machines to be built and assembled in the United States.

UNFILLED ORDERS

....Unfilled orders at the end of the reporting month are unfilled orders at the first of the month, plus new orders, less cancellations and less shipments. Any adjustments (due to corrections, price changes, etc.) are made through adjustments in cancellations, shipments or orders.

ORDNANCE AND ACCESSORIES, EXCEPT VEHICLES AND GUIDED MISSILES

........Major Group 348, Ordnance and Accessories, Except Vehicles and Guided Missiles, according to the Standard Industrial Classification, comprises Industry Groups

........3482. Small Arms Ammunition
3483. Ammunition, Except for Small Arms, not Elsewhere Classified
3484. Small Arms
3489. Ordnance and Accessories, Not Elsewhere Classified

OVERTIME

........See HOURS, OVERTIME

PAYROLL

........Includes the gross earnings paid in the calendar year to all employees on the payroll of operating manufacturing establishments.

Includes all forms of compensation directly to workers such as salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds.

Does not include employers' Social Security contributions or other non-payroll labor costs such as employees' pension plans, group insurance premiums, and workmen's compensation.

PLANT AND EQUIPMENT, EXPENDITURES FOR NEW

........New plant and equipment expenditures refer to all costs (both replacement and expansion) chargeable to fixed asset accounts and for which depreciation accounts (see DEPRECIATION) are ordinarily maintained. Included in the totals are expenditures for new construction, machinery, and new equipment (automobiles, trucks, and other transportation equipment, furniture and fixtures, office machinery and all other new equipment). The figures do not include expenditures for land and mineral rights, maintenance and repair, used plant and equipment, and expenditures made in foreign countries.

PRECISION INSTRUMENTS

........This classification, used in the American Machinist 12th Inventory, is not listed in the Standard Industrial Classification. The closest category is SIC Major Group 38.

........See INSTRUMENTS AND RELATED PRODUCTS

PRICE INDEX ....

The CONSUMER PRICE INDEX measures the effect of price change on the living costs of all urban consumers. It is calculated by comparing, from one period to the next, the cost of a "market basket" of goods and services usually purchased by this particular population group. For more detail, see "The Consumer Price Index, A Short Description of the Index as Revised", U.S. Bureau of Labor Statistics.

The PRODUCER PRICE INDEX is designed to show the general rate and direction of the composite of price movements in primary markets. It is designed to measure "real" price changes between two periods of time, i.e. to measure price changes not influenced by changes in quality, quantity, terms of sale, level of distribution, unit prices or source of price. For a more detailed description, see U.S. Bureau of Labor Statistics Bulletin 1910, "BLS Handbook of Methods".

PRIMARY PRODUCTS

........The products of an establishment which exceed in value its production of products of any other single industry.

PRODUCERS' DURABLE EQUIPMENT

........Includes the new and replacement purchase of various types of machinery, automobiles, trucks and other equipment used by the private sector in the production of goods and services.

PRODUCTION WORKERS

........Production and related workers include working foremen and all non-supervisory workers (including leadmen and trainees) engaged in fabricating, processing, assembling, inspection, receiving, storage, handling, janitorial and watchman services, product development, auxiliary production for plant's own use, and record keeping and services closely associated with the above production operations.

PRODUCTIVITY

........The total output index divided by the labor input index, The labor input index is the index of hours worked by all persons (formerly called man-hours).

PROFITS

........See INCOME

REAL GNP

........U.S. real GNP data are arrived at by dividing components of the seasonally adjusted current-dollars Gross National Product by appropriate price indexes. About 142 product groups are deflated separately each quarter. The quarterly results are adjusted to the annual constant-dollar figures which are prepared in greater detail.

QUITS

........See LABOR TURNOVER

SALES, NET, TOTAL

........Net Sales are the dollar value of machine tool shipments less returns and allowances, including dealers' commissions, if any.

SALES

........are net of returns, allowances, and discounts.

SCHEDULED WEEKLY HOURS

........See HOURS, SCHEDULED, WEEKLY

SECONDARY PRODUCTS

........Products which do not account for the highest proportion of the total shipments of an establishment and are "primary" to another industry.

SEASONALLY ADJUSTED

........Allowances have been made for recurrent seasonal movements. Dividing actual data by seasonal indexes provides seasonally adjusted data.

SEPARATIONS

........See LABOR TURNOVER

SEVERITY OF WORK INJURIES

........See WORK INJURIES

SHIFT DIFFERENTIAL

........Premium paid above straight-time rates for late or night shift.

SHIPMENTS—TOTAL CENSUS

........The U.S. Bureau of the Census publishes data on the value of all machine tool shipments and miscellaneous receipts. This includes the shipments and receipts of the machine tool industry proper (See separate entry—the Machine Tool Industry) as well as the machine tool shipments made by other industries.

Included in these shipments by product class and industry are not only the major classes of products such as boring machines, drilling machines, presses, etc., but also machine tools primarily designed for home workshops, laboratories, etc., parts sold separately, rebuilt machine tools and some tools not specified by kind. Also included are "miscellaneous receipts" of the machine tool industry for such items as contract and commission work, sales of products bought and resold, repair work, etc.

Every five years, the Census of Manufactures collects these data in considerable detail by seven-digit product codes. More than one hundred metal cutting products and about 50 metal forming products are listed, many by quantity and value, in the Census of Manufactures publication on Metalworking Machinery and Equipment for metal cutting and metal forming machine tools (SIC 3541 and 3542).

In years which are not Census years, an Annual Survey of Manufactures is undertaken which permits compilation of product data for five-digit product classes. Data for non-Census years are estimates based upon reports received from a probability sample of all manufacturing establishments.

The Census of Manufactures and Annual Survey data differ from the totals given by the Current Industrial Reports, MQ-35W, and from the NMTBA reports on shipments. The major differences are listed below.

........The Current Industrial Reports, MQ-35W (See separate entry—SHIPMENTS— COMPLETE MACHINE TOOLS—MQ-35W) differ from the Census of Manufactures and Annual Survey primarily because

........1) they do not include machine tools designed primarily for home workshops, garages, etc.,
2) they do not include parts and rebuilt or used machines.

The Current Industrial Reports, MQ-35W differ from NMTBA shipment reports (See separate item—SHIPMENTS—COMPLETE MACHINE TOOLS NMTBA) primarily because NMTBA reports only on shipments of complete machine tools valued at $2,500 or more.

SHIPMENTS—COMPLETE MACHINE TOOL-MQ-35W

........Data on shipments of complete machine tools are collected quarterly by the Bureau of Census jointly with the Business and Defense Services Administration.

The figures are published in the Current Industrial Reports, Series MQ-35W, Metalworking Machinery.

This report differs from the Census products reports in that it excludes

........1) parts and rebuilt or used machine tools;
2) machine tools primarily designed for home workshops, garages, etc.

........Shipments are shown by 5- and 7-digit SIC codes. The classification of products is being developed jointly by government agencies and industry.

The MQ-35W report also includes separate data on numerically controlled machines and on manufacturers' exports.

The value figures represent the manufacturers' selling price, F.O.B. factory, of complete machines as shipped, including all accessories, attachments and numerical controls that are ordered and shipped with the machines. Rebuilt machines, machine tools designed for use in home workshops, laboratories, garages, service shops, or for model making, imported machines, and power-driven hand tools are excluded.

SHIPMENTS—COMPLETE MACHINE TOOLS—NMTBA

........The National Machine Tool Builders' Association publishes a monthly report on orders and shipments for complete machine tools separated into metal cutting and metal forming and further subdivided into "domestic" and "foreign."

The data are collected from participating companies and expanded to industry totals. The totals are periodically adjusted to benchmarks provided by the MQ-35W (See separate entry—SHIPMENTS—COMPLETE MACHINE TOOLS—MQ-35W) for metal cutting and metal forming.

NMTBA data include new machine tools and the accessories, attachments and tools which are ordered and shipped with them. They cover machines built and assembled in the United States.

NMTBA data are published during the month following the report month.

SHIPMENTS—MAJOR USERS AND MAJOR USER CATEGORIES

........The term "shipments" as used in Series M3-1, Manufacturers' Shipments, Inventories, and Orders, U.S. Bureau of the Census, represents manufacturers' receipts, billings, or the value of products shipped, less discounts, returns, and allowances. Shipments for exports as well as those for domestic use are included.

The shipment estimates are adjusted annually to the benchmark levels from the Annual Survey of Manufacturers. (See also MAJOR USERS.)

STOCKHOLDERS' EQUITY

........Assets minus all obligations of the corporation, except those to stockholders. Annual data are average equity for the year (using four end-of-quarter figures). For details, see Federal Trade Commission—Securities and Exchange Commission, Quarterly Financial Report for Manufacturing Corporations.

STRAIGHT-TIME HOURLY EARNINGS

........See EARNINGS

STRUCTURE AND ADDITIONS
........See PLANT AND EQUIPMENT

SUPPLEMENTARY BENEFITS
........See COMPENSATION, SUPPLEMENTARY

TAXES
........See INCOME TAXES

TRANSPORTATION EQUIPMENT
........The Major Group SIC 37, Transportation Equipment, consists of SIC Groups.

........371. Motor Vehicles and Motor Vehicle Equipment
372. Aircraft and Parts
373. Ship and Boat Building and Repairing
374. Railroad Equipment
375. Motorcycles, Bicycles and Parts
376. Guided Missiles and Space Vehicles and Parts
379. Miscellaneous Transportation Equipment

Each major group or industry group consists of the establishments classified according to their major activity.

UNFILLED ORDERS
........See ORDERS, UNFILLED

UNIT LABOR COST
........Unit labor cost is arrived at by dividing compensation per man-hour by output per man-hour.

VACATIONS, PAID
........See COMPENSATION, SUPPLEMENTARY

VALUE ADDED
........Value added by manufacture is derived by subtracting the total cost of materials (including materials, supplies, fuel, electric energy, cost of resales and miscellaneous receipts) from the value of shipments (including resales) and other receipts, and adjusting the resulting amount by the net change in finished products and work-in-process inventories between the beginning and end of the year.

Value added by manufacture avoids the duplication in the value of shipments figure which results from the inclusion of the shipments of establishments producing materials and components along with the shipments of establishments producing finished products.

VALUE, IN FOREIGN COUNTRY
........See IMPORTS INTO THE UNITED STATES

VALUE, AT PORT
........See EXPORTS OF DOMESTIC MERCHANDISE

VALUE OF SHIPMENTS
........See SHIPMENTS

INDEX

—A—

Accessions, ix-x
Advanced processed goods, 25
Africa:
  machinery:
    imports, 239
  machine tools:
    exports, Sweden, 225
    exports, Taiwan, 231
    imports, Sweden, 225
  U.S. exports:
  machine tools, 137
  metal cutting machine tools, 139
  metal forming machine tools, 141
  U.S. investment in, 47
Aircraft:
  capital expenditures, 18
  new orders, 33
  production indexes, 27
  unfilled orders, 33
Aircraft engines and parts:
  in use, 271
Aircraft, missiles and parts, iii
Aircraft and parts industry:
  compensation, 246, 247
Algeria:
  imports, Italy, 222
Appropriations, capital, 20
Argentina:
  imports, 177
  machine tools:
    exports, 165, 166
      Czechoslovakia, 234
      Italy, 222
      Switzerland, 226
    imports, 165, 166
      Czechoslovakia, 234
      France, 219
      Italy, 222
      Switzerland, 226
    production, 165, 166
  metal cutting machine tools:
    imports, Germany, 194
  metal forming machine tools
    imports, Germany, 195
  U.S. exports:
    machine tools, 135
    metal cutting machine tools, 138
    metal forming machine tools, 140
Asia:
  capital expenditures, 14
  machinery:
    imports, 239
      Taiwan, 231
  metal cutting machine tools:
    imports, Germany, 194
  U.S. exports:
    machine tools, 137
    metal cutting machine tools, 149
    metal forming machine tools, 141
  U.S. investment in, 47
  see also specific countries
Assets, iii
  gross book value of depreciable assets, 21, 259
  net value of property, plant and equipment, 22
Australia:
  capital expenditures, 14
  cost recovery allowable for tax purposes, 56
  direct foreign investments in, 13
  gross domestic product, 44
  investment patterns, 45
  machine tools:
    exports, 166, 167
      France, 221
      Spain, 215
      Sweden, 225

Switzerland , 226
imports, 165, 166
France, 219
Spain, 215
Sweden, 225
Taiwan, 232
United Kingdom, 210, 211
production, 165, 166
metal cutting machine tools:
imports, Japan, 203
U.S. exports:
machine tools, 137
metal cutting machine tools, 139
U.S. investment in, 47
Australia and Oceania:
metal cutting machine tools:
imports, Germany, 194
metal forming machine tools:
imports, Germany, 195
Austria:
machine tools:
consumption, 163
exports, 165, 166, 168, 169
Czechoslovakia, 233
France, 220
Italy, 222
Netherlands, 227
Spain, 215
Sweden, 225
Switzerland, 226
imports, 165, 166, 168, 169
Czechoslovakia, 234
France, 219
Italy, 220
Netherlands, 227
Spain, 215
Sweden, 225
Switzerland, 226
production, 165, 166 168, 169
metal cutting machine tools:
exports, 172
Germany, 196
Japan, 204
imports, 171
Germany, 194
production, 170
metal forming machine tools:
exports, 172
Germany, 197
imports 171
Germany 195
production, 170
U.S. exports:
machine tools, 136
metal cutting machine tools, 138
metal forming machine tools, 140, 141
U.S. imports:
cutting machine tools, 129
forming machine tools, 129
machine tools, 128
Automatic assembly:
in use, 270
Automatic mechanical metalworking machinery:
shipments, 102
unfilled orders, 102
Average hourly earnings, v
Average straight-time hourly earnings, v
Average weekly earnings, v
Average weekly hours, viii

—B—

Backlog, xiii-iv
of unspent appropriations, 20
see also Unfilled orders
Balance of payments, 43
worldwide, 53
Balance of trade, 12, 43
machine tools, 123
metal cutting tools, 124
metal forming tools, 125
worldwide, 53
Bar, tube, section drawing and forming machines:
United Kingdom:
shipments, 209
Belgium:
cost recovery allowable for tax purposes, 56, 57
gross domestic product, 44
gross national product:

    tax revenue as percent of, 58
  machine tools:
    exports, 165, 166, 168, 169
      Czechoslovakia, 234
      France, 220
      Italy, 222
      Spain, 215
      Sweden, 225
      Switzerland, 226
      United Kingdom, 209
    imports, 165, 166, 167, 168
      Czechoslovakia, 234
      France, 219
      Italy, 220
      Spain, 215
      Sweden, 225
      Switzerland, 226
      United Kingdom, 209
  production, 165, 166, 168
      169
  metal cutting machine tools:
    exports, 172
      Germany, 196
    imports, 171
      Germany, 194
    production, 170
  metal forming machine tools:
    exports, 172
      Germany, 197
    imports, 171
      Germany, 195
    production, 71
  U.S. exports:
    machine tools, 136
    metal cutting tools, 138
    metal forming tools, 140
  U.S. imports:
    cutting machine tools, 129
    forming machine tools, 129
    machine tools, 128
Bending machines:
  imports:
    EEC countries, 181
  Japan:
    exports, 199
    imports, 199
    production, 199
  shipments:
    value of, 119
Bending (and forming) machines:
  France
    production, 217
  Germany:
    exports, 195
  military prime contract
    awards for, 120
  shipments, 92, 98, 99, 117
  U.S. exports, 143, 145, 155
    manufacturers, 157, 158, 159
  U.S. imports of, 126, 133
  in use, 270
Bending (and rolling) machines:
  Spain:
    exports, 214
    imports, 214
Bending (and straightening)
  machines:
  Germany:
    exports, 192
    imports, 193
    production, 191
Bending and forming tools:
  Germany:
    imports, 197
Benelux countries:
  machine tools:
    exports, 182, 183
    imports, 180, 181
Bolt, screw and nut making
  machines:
  Germany:
    exports, 192
    imports, 193
    production, 191
Bolt, screw and nut working
  machines:
  Germany:
    exports, 195
    imports, 197
Book value, 261
Boring machines:
  Canada:
    exports, 228
    imports, 228
  Czechoslovakia:
    production, 233

- France:
  - exports, 221
  - imports, 221
  - production, 216
- exports, 147
  - worldwide, 172
- imports, 126, 147
  - worldwide, 171
- India:
  - exports, 229
  - production, 229
- Japan:
  - exports, 200, 201, 202, 204
  - imports, 200, 202, 205
  - production, 200, 202
- military prime contract awards for, 120
- Netherlands:
  - exports, 227
  - imports, 227
- production:
  - worldwide, 170
- shipments, 92, 96, 97, 100, 103
  - value of, 119
- Taiwan:
  - consumption, 229
  - imports, 229
- United Kingdom:
  - exports, 210, 211
  - imports, 212, 213
  - shipments, 208, 209
- U.S. exports, 144
  - manufacturers, 157, 158
- U.S. imports of, 132
  - in use, 268

Boring (and drilling) machines:
- Germany:
  - exports, 192, 194
  - imports, 193, 195
  - production, 191

Boring (drilling and milling) machines:
- U.S. exports, 142

Boring-milling machines:
- exports:
  - EEC countries, 182
- imports:
  - EEC countries, 180
- Spain:
  - exports, 214
  - imports, 214

Boring and vertical turret lathe:
- U.S. imports of, 131

Brazil:
- gross domestic product, 44
- imports, 175
- machine tools:
  - consumption, 163
  - exports, 165, 166
    - Czechoslovakia, 234
    - Spain, 215
    - Switzerland, 226
  - imports, 165, 166
    - Czechoslovakia, 234
    - France, 219
    - Spain, 215
    - Switzerland, 226
  - production, 165, 166
- metal cutting machine tools:
  - imports, Germany, 194, 195
  - imports, Japan, 202, 204
- U.S. exports:
  - machine tools, 136
  - metal cutting machine tools, 138
  - metal forming machine tools, 140

Broaching machines:
- India:
  - exports, 229
  - production, 229
- imports:
  - EEC countries, 180, 182
- Japan:
  - exports, 200
  - imports, 200
  - production, 200
- military prime contract awards for, 120
- shipments, 109-110
- Spain:
  - exports, 214
  - imports, 214
- Sweden:
  - exports, 224
  - imports, 224

    production, 224
  U.S. exports, 142, 143
    manufacturers, 158
  in use, 268
Budget, federal, 9
Bulgaria:
  machinery:
    exports, 239
  machine tools:
    exports, 165, 166
      Czechoslovakia, 234
      France, 220
    imports, 165, 166
      Czechoslovakia, 165, 166
      France, 219
  production, 165, 166
  metal cutting machine tools:
    imports, Germany, 194
    production, 238
  metal forming machine tools:
    imports, Germany, 195
Burma:
  metal cutting machine tools:
    imports, Japan, 203
Business cycle:
  reference dates, 30
Business cycle indicators, 29

—C—

Canada:
  balance of trade, 53
  capital expenditures, 14
  compensation, 53, 55, 256
  consumer prices, 48, 49
  cost recovery allowable for tax purposes, 56, 57
  direct foreign investments in, 13
  exports:
    financing, 46
    unit value of, 51
  gross domestic product, 44
    tax revenue as percent of, 58
  imports, 174
  industrial production, 47
  investment patterns, 45
  machinery:
    imports, 239
  machine tools:
  consumption, 163
  exports, 165, 166, 227
    Czechoslovakia, 233
    France, 220
    Italy, 222
    Spain, 215
    Sweden, 225
    Switzerland, 226
  imports, 165, 166, 227
    Czechoslovakia, 234
    France, 219
    Italy, 222
    Spain, 215
    Sweden, 225
    Switzerland, 226
    Taiwan, 232
    United Kingdom, 209, 210
  production, 165, 166
  in use, 265
  metal cutting machine tools:
    imports, Germany, 194
    imports, Japan, 119
  metal forming machine tools:
    imports, Germany, 195
  productivity, 54, 55
  trade, 52
  U.S. exports:
    machine tools, 136
    metal cutting machine tools, 138
    metal forming machine tools, 140
  U.S. imports:
    cutting machine tools, 129
    forming macnine tools, 129
    machine tools, 128
  U.S. investment in, 47
  wholesale prices, 49, 50
Cancellations, iii
  metal cutting tools, 79
  metal forming tools, 79
Capacity utilization, 24, 25, 26, iii
Capital appropriations, 20
Capital expenditures, 260, 261
  durable goods industries and, 16, 17
  foreign affiliates of U.S.

    companies, 14
  machine tool industries, 18
  major industries, 15
  new projects, 15
  see also Plant and equipment
Capital formation:
  gross domestic product and, 45
  manufacturing industries, 19
Capital goods industries, iii
  inventories, 31
  new orders, 32
  shipments, 34
  unfilled orders, 32
Central America:
  machine tools:
    exports, Sweden, 225
    imports, Sweden, 225
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
  see also specific countries
Chile:
  metal cutting machine tools:
    imports, Germany, 194
  metal forming machine tools:
    imports, Germany, 195
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
China:
  gross domestic product, 44
  imports, 178
  machine tools:
    consumption, 163
    exports, 165, 166
    imports, 166, 167
    production, 165, 166
  see also People's Republic of
    China
Coil handling machines:
  in use, 270
Colombia:
  U.S. exports:
    machine tools, 137
    metal cutting, 139
    metal forming, 141
Commmunist countries:
  machinery:
    exports, 239
    imports, 239
  machine tools:
    exports, 239
    imports, 236, 237
  metal cutting machine tools,
    production, 236
  trade, 51, 52
  U.S. trade with, 52
  see also specific countries
Compensation, 251, 252, 255, 256
  v, xiv
  aircraft and parts industry,
    246, 247
  durable goods industries, 246
    247
  machinery manufacturing
    industry, 248, 249
  machine tool industry, 251
    France, 218
  in manufacturing, 28
  metal cutting machinery
    industry, 246, 247
  metal cutting machine tool
    industry, 245, 252
  metal forming machine tool
    industry, 251
  metalworking machinery
    industry, 245, 246, 247
  motor vehicles and equipment
    industry, 246, 247
  nonelectrical machinery industry,
    246, 247
  worldwide, 53, 55, 255, 256
Compensation, supplementary,
  iii-iv
Constant dollars, iv, viii
Consumer price index, xiv-xv
Consumer prices:
    worldwide, 48, 49
Consumption, iv
  leading nations, 163
  machine tool:
    imports as percent of domestic,
      126, 188-189
    U.S. machine tool imports and,

    126, 127
worldwide machine tool, 162
Controls, xiii
Corporate capital consumption
  allowances, iv
Corporate profits:
  actual and projected, 7
  tax and, 8
Cost of materials, 62, 63, xii
Cost recovery allowable for tax
  purposes:
  worldwide, 56, 57
Coverage ratio, 59
Cuba:
  machine tools:
    exports, Czechoslovakia, 234
    imports, Czechoslovakia, 234
Cutoff and sawing machines:
  in use, 268
Cutting machines:
  Netherlands:
    exports, 227
    imports, 227
Cutting machine tools:
  imports of, 129
  see also Exports; Imports
Czechoslovakia:
  imports, 178
  machinery:
    exports, 239
  machine tools:
    consumption, 163
    exports, 165, 166, 233-234
      France, 220
      Spain, 215
      Switzerland, 226
    imports, 165, 166, 233-234
      France, 220
      Spain, 215
      Switzerland, 226
    production, 165, 166
  metal cutting machine tools:
    exports, 233
      Germany, 196
      Japan, 204
    imports, 233
      Germany, 194
    production, 233, 238
  metal forming machine tools:
    exports, 233
      Germany, 197
    imports, 234
      Germany, 195
    production, 234
  U.S. imports:
    cutting machine tools, 120
    machine tools, 128

—D—

Defense:
  inventories, 31
  new orders, 32
  products, iv
  shipments, 34
  unfilled orders, 32
Defense contracts:
  for machine tools, 120
Defense purchasing:
  price deflators, 39
  type of product, 39
Denmark:
  gross national product:
    tax revenue as percent of, 58
  machine tools:
    exports, 165, 166, 168, 169
      Czechoslovakia, 234
      France, 219
      Netherlands, 227
      Spain, 215
      Sweden, 225
      Switzerland, 226
    imports, 165, 166, 168, 169
      Czechoslovakia, 234
      France, 219
      Netherlands, 227
      Spain, 215
      Sweden, 225
      Switzerland, 226
      United Kingdom, 210, 211
    production, 165, 166, 168, 169
  metal cutting machine tools:
    exports, 172
      Germany, 196
    imports, 171
      Germany, 195
    production, 170

  metal forming machine tools:
    exports, 172
      Germany, 197
    imports, 171
      Germany, 195
    production, 170
  productivity, 54
  U.S. exports:
    machine tools, 136
    metal cutting machine tools, 138
    metal forming machine tools, 130
  U.S. imports:
    cutting machine tools, 129
    machine tools, 128
Depreciation, 259, 261, iv
  capital formation, 19
  cost recovery allowable for tax purposes and, 56-57
Developed countries:
  trade, 52
  U.S. investment in, 47
  see also specific countries
Developing countries:
  imports, 175
  see also specific countries
Differential, shift, iv, xv
Direct foreign investments, 13
Domestic orders, shipments, unfilled orders, cancellations, v
Drilling machines:
  Canada:
    exports, 228
    imports, 228
  Czechoslovakia:
    production, 233
    exports, 148
    worldwide, 172
  France:
    exports, 221
    imports, 221
    production, 216, 217
  imports, 126, 148
    EEC countries, 183
    worldwide, 171
  India:
    exports, 229
    production, 229
  Japan:
    exports, 200, 201, 202, 204
    imports, 200, 202, 205
    production, 200, 202
  military prime contract awards for, 120
  production:
    worldwide, 170
  shipments, 92, 96, 97, 100 104
    value of, 118
  Spain:
    exports, 214
    imports, 214
  Sweden:
    exports, 224
    imports, 224
    production, 224
  Taiwan:
    consumption, 229
    imports, 229, 230
    exports, 229, 231, 232
    production, 229
  United Kingdom:
    exports, 210, 211
    imports, 212, 213
    shipments, 207, 208
  U.S. exports, 144
  U.S. imports of, 131, 132
  in use, 270
Durable goods, v
  capacity utilization, 25, 26
  capital appropriations and backlog of, 20
  defense purchases, 39
  inventories, 31
  new orders, 32
  production indexes, 27
  shipments, 34
  unfilled orders, 32
Durable goods industries, v
  capital expenditures, 15, 16, 17, 18
  compensation, 246, 247
  new projects, 15
  overtime hours, 254
  shipments, 4, 5
Durable manufactures:

- producer price indexes
  for, 41

—E—

- Earnings, v
  - see also Compensation
- Eastern bloc countries:
  - machine tools:
    - exports, Netherlands, 227
    - imports, Netherlands, 227
  - see also Communist countries
- Eastern Europe:
  - imports, 177
  - metal cutting machine tools:
    - exports, Japan, 205
    - production, 238
  - U.S. trade with, 52
  - see also specific countries
- East Germany:
  - machine tools:
    - consumption, 163
    - exports, 165, 166
      - Czechoslovakia, 234
      - France, 220
      - Italy, 222
      - Spain, 215
      - Switzerland, 226
    - imports, 165, 166
      - Czechoslovakia, 234
      - France, 219
      - Italy, 222
      - Spain, 215
      - Switzerland, 226
      - United Kingdom, 209
    - production, 165, 166
  - machinery:
    - exports, 239
  - machine tools:
    - shipments, 164
  - metal cutting machine tools:
    - exports, Japan, 204
    - production, 238
  - U.S. imports:
    - cutting machine tools, 129
    - machine tools, 128
- Ecuador:
  - U.S. exports:
    - machine tools, 136
    - metal cutting, 138
    - metal forming, 140
- Edging machines:
  - Netherlands:
    - exports, 227
    - imports, 227
- Egypt:
  - machine tools:
    - exports, Czechoslovakia, 234
    - imports:
      - Czechoslovakia, 234
      - Italy, 222
      - United Kingdom, 209
  - U.S. exports:
    - machine tools, 137
    - metal cutting, 139
    - metal forming, 141
- Electrical discharge machines:
  - U.S. exports, 142, 144
  - U.S. imports, 132
- Electrical machinery, v
  - capacity utilization, 25, 26
  - capital expenditures, 15, 18
  - gross book value of depreciable
    assets, 21
  - inventories, 31
  - machine tools:
    - in use, 268
  - net value of property, plant,
    and equipment, 22
  - new orders, 33
  - new projects, 15
  - producer price indexes, 38
  - shipments, 34
  - unfilled orders, 33
  - in use, 270, 271
- Electrical and ultrasonic erosion
  machines:
  - military prime contracts awards
    for, 120
- Employment, 241
  - machine tool industry, 250,
    251
    - France, 215
  - metal cutting machine tool
    industry, 244, 248, 252
  - metal forming machine tool
    industry, 243, 248, 251

Equipment and plant:
  expenditures:
    actual and projected, 7
  orders for, 29
Equity, xvii
Establishment, v
Europe:
  capital expenditures, 14
  machinery:
    imports, 239
      Taiwan, 231
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
  see also Western Europe
European Economic Community (EEC):
  direct foreign investments in, 13
  exports:
    unit value of, 51
  industrial production, 47
  machine tools:
    exports, 182, 183, 186, 187
    imports of, 180, 181, 184, 185
  trade, 52
  U.S. investment in, 47
  see also specific countries
Exchange rates, v
Expenditures, see Capital expenditures
Expenditures for durable goods:
  actual and projected, 7
Expenditures on new plant and equipment, xiv
Exports, vi-vii
  bending and forming machines, 155
  boring machines, 147
  drilling machines, 148
  financing, 46
  forging machines, 155
  gear cutting and finishing machines, 149
  grinding and polishing machines, 150
  lathes, 147, 151
  machine tools, 123, 135, 146
      by destination, 136, 137
      East Germany, 167
      European Economic Commununity, 167
      Japan, 167
      percent of world machine tool consumption, 135
      U.S., 167
      West Germany, 167
      worldwide, 165, 166, 167, 168, 169
    machining centers, 153
    milling machines, 152
    manufacturers, 156, 159
    market shares, 173-179
    metal cutting machine tools, 146, 154
      by destination, 136-139
      European Economic Community countries, 182
      by machine classification, 142, 144
      manufacturers' exports, 156, 158
      worldwide, 165-166, 169
    metal cutting tools, 124
    metal forming machine tools, 146, 155
      by destination, 136-137, 140-141
      European Economic Community countries, 183
      by machine classification, 144, 145
      manufacturers' exports, 156, 159
      worldwide, 165-166, 169, 172
    metal forming tools, 125
    presses, 155
    punching and shearing machines, 155
    United States:
      Communist countries, 31
      goods and services, 6
    unit value of, 51
    worldwide, 52
  see also specific countries

—F—

Fabricated metal products, vii

  capacity utilization, 25, 26
  capital expenditures, 18
  gross book value of depreciable assets, 21
  inventories, 31
  machine tools:
    in use, 268
  net value of property, plant, and equipment, 22
  new orders, 32
  production indexes, 27
  shipments, 34
  unfilled orders, 32
  in use, 269
  see also Industrial production
Federal budget, 9
Federal Republic of Germany:
  capital expenditures, 14
  compensation, 255, 256
  see also West Germany
Female employees, 243
Finland:
  machine tools:
    exports, France, 220
      Sweden, 225
    imports, France, 219
      Sweden, 225
  U.S. exports:
    machine tools, 137
    metal cutting, 138
    metal forming, 140
Folding machines:
  imports:
    European Economic Community countries, 181
Foreign investment, direct U.S., 13, vii
Foreign orders, shipments, unfilled orders, and cancellations, vii
Foreign trade:
  metal cutting, 124
  metal forming, 124
  see also Balance of trade; Exports; Imports; and specific countries
Forging machines:
  France:
    exports, 221
    imports, 221
  imports:
    worldwide, 171
  Japan:
    exports, 199
    imports, 199
    production, 199
  production:
    worldwide, 170
  shipments, 98, 99, 118
  United Kingdom:
    shipments, 209
  U.S. exports, 143, 145, 155
    manufacturers, 159
  U.S. imports of, 126, 133
  in use, 270
Forging machines and hammers:
  military prime contract awards for, 120
Forging machines and presses:
  U.S.S.R.:
    production, 235
Forging and stamping machines:
  exports:
    European Economic Community countries, 183
  Spain:
    exports, 214
    imports, 214
Forming machine tools:
  imports of, 129
  Netherlands:
    exports, 227
    imports, 227
    see also Exports; Imports
France:
  balance of trade, 53
  capital expenditures, 14
  compensation, 53, 55, 253, 254
  consumer prices, 48, 49
  cost recovery allowable for tax purposes, 56, 57
  export market share of, 173-179
  exports:
    financing, 46

  - unit value of, 51
- gross domestic product, 44
- tax revenue as percent of, 58
- imports, 174
- industrial production, 47
- investment patterns, 45
- machine tools:
  - consumption, 163
  - employment, 215
  - exports, 165, 166, 168, 169 182, 183, 216
    - Communist countries, 236-237
    - Czechoslovakia, 234
    - Italy, 222
    - Netherlands, 226
    - Spain, 215
    - Sweden, 225
    - Switzerland, 226
    - Taiwan, 230
    - United Kingdom, 212, 213
  - imports, 165, 166, 168, 169 180, 181, 220
    - Czechoslovakia, 234
    - France, 219
    - Italy, 222
    - Netherlands, 227
    - Spain, 215
    - Sweden, 225
    - Switzerland, 226
    - United Kingdom, 210, 211
  - production, 165, 166, 168, 169
  - shipments, 164, 218
  - in use, 265
- metal cutting machine tools:
  - exports, 172, 221
    - Germany, 197
    - Japan, 204, 205
  - imports, 170, 221
    - Germany, 194
  - production, 170, 216
- metal forming machine tools:
  - exports, 172, 221
    - Germany, 197
  - imports, 171, 221
    - Germany, 195
  - production, 170, 217
- numerically controlled machine tools:
  - exports, 218
  - production, 218
- productivity, 54, 55
- trade, 52
- U.S exports:
  - machine tools, 136
  - metal cutting, 139
  - metal forming, 141
- U.S. imports:
  - cutting machine tools, 129
  - forming machine tools, 129
  - machine tools, 128, 134
- U.S. investment in, 47
- wholesale prices, 49, 50

Fringe benefits, iii-iv

Furniture and fixture industry, vii

—G—

Gear cutting machines:
- France:
  - exports, 221
  - imports, 221
  - production, 216, 217
- Germany:
  - exports, 192, 194
  - imports, 193, 196
  - production, 191
- India:
  - exports, 229
  - production, 229
- imports:
  - European Economic Community countries, 180, 182
- Spain:
  - exports, 214
  - imports, 214
- Sweden:
  - exports, 224
  - imports, 224
  - production, 224
- Taiwan:
  - consumption, 229
  - exports, 229, 231, 232
  - imports, 229, 230
  - production, 229
- U.S. exports:

    manufacturers, 157, 158
  in use, 268
Gear cutting (and finishing) machines:
  exports, 149
    worldwide, 172
  imports, 149
    worldwide, 171
  Japan:
    exports, 201
    imports, 205
  military prime contract awards for, 120
  production:
    worldwide, 170
  shipments, 92, 96, 97, 103
    value of, 119
  United Kingdom:
    exports, 210, 211
    imports, 212, 213
    shipments, 208
Gear cutting (and hobbing) machines:
  imports, 126
  U.S. imports, 131
Gear hobbing machines:
  Japan:
    exports, 200
    imports, 200
    production, 200
Germany:
  capital expenditures, 14
  compensation, 255, 256
  see also West Germany
Government purchases:
  goods and services, 6
Government receipts:
  gross national product, 8
Greece:
  machine tools:
  exports, Italy, 222
  imports, France, 219
    Italy, 220
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
Grinding machines:
  Canada:
    exports, 228
    imports, 228
  Czechoslovakia:
    production, 233
  imports:
    European Economic Community countries, 180, 182
  Japan:
    exports, 200, 201, 202, 204
    imports, 200, 202, 205
    production, 200, 202
  military prime contract awards for, 120
  Taiwan:
    consumption, 229
    exports, 229, 231, 232
    imports, 229, 230
    production, 229
  U.S. exports, 144
    manufacturers, 157, 158
  U.S. imports of, 126, 131, 132
  in use, 268
Grinding (and finishing) machines:
  U.S. exports, 142, 144
Grinding (honing and polishing) machines:
  Germany:
    exports, 192, 194
    imports, 193, 196
    production, 191
  Netherlands:
    exports, 227
    imports, 227
Grinding (and polishing) machines:
  exports, 150
    worldwide, 172
  France:
    exports, 221
    imports, 221
  imports, 126, 150
    worldwide, 171
  production:
    worldwide, 170
  shipments, 92, 96, 97, 101,

107, 108
value of, 119
India:
exports, 229
production, 229
Spain:
exports, 214
imports, 214
Sweden:
exports, 224
imports, 224
production, 224
United Kingdom:
exports, 210, 211
imports, 212, 213
shipments, 209
Grinding (polishing, honing and lapping) machines:
France:
production, 216, 217
Gross Domestic Product (GDP)
fixed capital formation, 44
worldwide, 44
Gross National Product (GNP), vii, xv
actual and projected, 7
components, 6
government receipts, 8
machine tools and, 4, 5
price deflators, 7
private investments and, 10, 11
tax revenues as percent of, 58
Gross new orders, xiii-xiv
see also New orders; Unfilled orders
Gross private domestic investment, vii

—H—

Hammers:
military prime contract awards for, 120
Sweden:
exports, 224
imports, 224
production, 224
Hammers, forging and riveting machines:
Germany:
exports, 192, 195
imports, 193, 197
production, 191
Headers and upsetters:
U.S. exports, 143, 145
Health, insurance and retirement plans, iii-iv
Holidays, paid, iii-iv
Hong Kong:
U.S. exports:
machine tools, 137
metal cutting, 139
metal forming, 141
Honing machines:
in use, 270
Honing (and lapping) machines:
imports:
European Economic Community countries, 180
Honing (polishing and lapping) machines:
imports:
European Economic Community countries, 182
Hours, 28, 29
metal cutting machine tool industry, 245, 252, 253
metal forming machine tool industry, 253
metalworking machinery industry, 245
overtime, 254
Hours, average weekly, viii
Hours, overtime, viii
Hours, scheduled, weekly, viii
Hungary:
imports, 179
machine tools:
consumption, 163
exports, 165, 166, 239
Czechoslovakia, 234
France, 220
Switzerland, 226
imports, 165, 166

      Czechoslovakia, 234
      France, 219
      Switzerland, 226
      United Kingdom, 209
    production, 165, 166
  metal cutting machine tools:
    exports, Germany, 196
    imports, Germany, 194
    production, 238
  metal forming machine tools:
    exports, Germany, 197
    imports, Germany, 195
Hydraulic presses:
  exports:
    European Economic Community countries, 183
  France:
    exports, 221
    imports, 220
  Germany:
    exports, 192, 195
    imports, 193, 197
    production, 191
  imports:
    European Economic Community countries, 181
  Japan:
    exports, 199
    imports, 199
    production, 199
  Netherlands:
    exports, 227
    imports, 227
Hydraulic (and pneumatic) presses, 114
  military prime contract awards for, 120
  U.S. exports, 143, 145
      manufacturers, 157, 158
  U.S. imports of, 133
  in use, 270
Hydraulic shearing machines:
  exports:
    European Economic Community countries, 183
  imports:
    European Economic Community countries, 181

—I—

Implicit price deflator, viii
Income, ix
Imports, viii-ix
  boring machines, 147
  cutting machine tools:
    countries of origin, 129
  drilling machines, 148
  forming machine tools:
    countries of origin, 129
  gear cutting and finishing machines, 149
  grinding and polishing machines, 150
  lathes, 147, 151
  machine tools, 123, 146
    countries of origin, 128
    by machine classification, 131
    as percentage of U.S. machine tool consumption, 126
    worldwide, 165-166, 168, 169
  machining centers, 153
  metal cutting, 146, 154
    by machine, 131, 132
    European Economic Community countries, 180
    worldwide, 165-166, 169, 171
  metal cutting tools, 124
  metal forming machine tools, 146, 155
    European Economic Community countries, 181
    worldwide, 165-166, 169, 171
  metal forming tools, 125
  milling machines, 152
  unfilled orders and, 130
  U.S.:
    Communist countries, 52
  worldwide, 52
  see also specific countries
India:
  imports to, 176
  machine tools:
    consumption, 165
    exports, 165, 166, 168, 169, 229
      Czechoslovakia, 234
      France, 220

    - Switzerland, 226
  - imports, 165, 166, 168, 169
      - Czechoslovakia, 234
      - France, 219
      - Switzerland, 226
      - United Kingdom, 209
    - production, 165, 166, 168, 169, 229
  - metal cutting machine tools:
    - exports, 172
    - imports, 171
      - Germany, 194
    - production, 170
  - metal forming machine tools:
    - exports, 172
    - imports, 171
      - Germany, 195
    - production, 170
  - U.S. exports:
    - machine tools, 137
    - metal cutting machine tools, 139
    - metal forming machine tools, 141
- Indicators:
  - business cycle, 29
- Indonesia:
  - metal cutting machine tools:
    - imports, Germany, 194
  - metal forming machine tools:
    - imports, Germany, 195
- Industrial production, 28, xv
  - actual and projected, 7
  - indexes of, 27
  - worldwide, 47, 54, 55
- Industrial production, total, ix
- Injury rates, 254
- Instruments:
  - inventories, 31
  - net value of property, plant, and equipment, 22
  - production indexes, 27
  - shipments, 34
- Instruments and related products, ix
- Interest rates:
  - on business loans, 23
- International investment patterns, 45
- Inventories, ix
  - actual and projected, 7
  - machine tool industry, 72
  - of manufacturers, 31
  - net change, 29
- Inventory turnover, 259
- Investment:
  - capital formation and, 19
  - direct foreign, 13
  - gross domestic, 6
  - gross national product and,10, 11
  - U.S.:
    - abroad, 47
- Investment, patterns, international, 45
- Iran:
  - machine tools:
    - exports, Czechoslovakia, 234
    - imports, Czechoslovakia, 234
      - France, 219
  - metal cutting machine tools:
    - imports, Germany, 194
  - metal forming machine tools:
    - imports, Germany, 195
  - U.S. exports:
    - machine tools, 137
    - metal cutting, 139
    - metal forming, 141
- Iraq:
  - machine tools:
    - imports, United Kingdom, 209
- Ireland:
  - machine tools:
    - imports, United Kingdom,209
  - U.S. exports:
    - machine tools, 136
    - metal cutting, 138
    - metal forming, 140
- Israel:
  - machine tools:
    - exports, Switzerland, 226
    - imports, France, 219
      - Switzerland, 226
  - metal cutting machine tools:
    - imports, Germany, 194
  - metal forming machine tools,
    - imports, Germany, 195
  - U.S. exports:
    - machine tools, 137
    - metal cutting machine

    - tools, 139
  - metal forming machine tools, 141
- Italy:
  - balance of trade, 53
  - capital expenditures, 14
  - compensation, 53, 55, 255, 256
  - consumer prices, 48, 49
  - cost recovery allowable for tax purposes, 56, 57
  - export market share of, 173-179
  - exports:
    - unit value of, 51
  - gross domestic product, 44
    - tax revenue as percent of, 58
  - industrial production, 47
  - investment patterns, 45
  - machine tools:
    - consumption, 163
    - exports, 165, 166, 168, 169, 182, 183, 222, 223, 224
      - Communist countries, 236-237
      - Czechoslovakia, 234
      - France, 220
      - Netherlands, 227
      - Spain, 215
      - Sweden, 225
      - Switzerland, 226
      - United Kingdom, 212, 213
    - imports, 165, 166, 168, 169 180, 181, 222-224
      - Czechoslovakia, 234
      - France, 219
      - Netherlands, 227
      - Spain, 215
      - Sweden, 225
      - Switzerland, 226
      - United Kingdom, 209
    - production, 165, 166, 168, 169, 223
    - shipments, 164
    - in use, 267
  - metal cutting machine tools:
    - exports, 172
      - Germany, 196
      - Japan, 204
    - imports, 171
      - Germany, 194
    - production, 170
  - metal forming machine tools:
    - exports, 172
      - Germany, 195
    - imports, 171
      - Germany, 197
    - production, 170
  - productivity, 54, 55
  - trade, 52
  - U.S. exports:
    - machine tools, 136
    - metal cutting, 137
    - metal forming, 140
  - U.S. imports:
    - cutting machine tools, 129
    - forming machine tools, 129
    - machine tools, 128, 134
  - wholesale prices, 49, 50

—J—

- Japan:
  - balance of trade, 53
  - capital expenditures, 14
  - compensation, 53, 55, 255, 256
  - consumer prices, 48, 49
  - cost recovery allowable for tax purposes, 56, 57
  - direct foreign investments in, 13
  - export market share of, 173-179
  - exports:
    - financing, 46
    - unit value of, 51
  - gross domestic product, 44
    - tax revenue as percent of, 58
  - imports:
    - percent of domestic consumption, 188
  - imports, 175
  - industrial production, 47
  - investment patterns, 45
  - machine tools:
    - consumption, 163

    - exports, 164, 166, 168, 169
      - Communist countries, 236-237
      - Czechoslovakia, 234
      - France, 220
      - Italy, 222
      - Spain, 215
      - Sweden, 225
      - Switzerland, 226
      - Taiwan, 230
      - United Kingdom, 212, 213
    - imports, 165, 166, 168, 170, 239
      - Czechoslovakia, 234
      - France, 219
      - Italy, 222
      - Spain, 215
      - Sweden, 225
      - Switzerland, 226
      - Taiwan, 232
      - United Kingdom, 209
    - production, 165, 166, 168, 169
    - shipments, 164
    - in use, 267
  - metal cutting machine tools:
    - domestic demand, 198
    - employment in, 199
    - exports, 172, 198, 200, 201, 202, 204
      - Germany, 196
    - imports, 171, 198, 200, 204, 205
      - Germany, 194
    - production, 170, 198, 200
  - metal forming machine tools:
    - exports, 172, 198, 199
      - Germany, 197
    - imports, 171, 198, 199
      - Germany, 195
    - production, 170, 198, 199
  - numerically controlled metal cutting machine tools:
    - exports, 202
    - imports, 202
    - production, 202
  - productivity, 54, 55
  - trade, 52
    - U.S. exports:
      - machine tools, 137
      - metal cutting, 139
      - metal forming, 141
    - U.S. imports:
      - cutting machine tools, 129
      - forming machine tools, 129
      - machine tools, 128, 134
    - U.S. investment in, 47
    - wholesale prices, 49, 50
- Jig boring and milling machines:
  - imports:
    - European Economic Community countries, 182

—K—

- Korea:
  - machine tools:
    - consumption, 163
    - exports, 165, 166
    - imports, 165, 166
    - production, 165, 166
  - see also Korea, Republic of; Republic of Korea
- Korea, Republic of:
  - U. S. exports:
    - machine tools, 137
    - metal cutting, 138
  - see also Korea; Republic of Korea

—L—

- Labor cost:
  - supplementary, 255
- Lapping machines:
  - in use, 269
- Lathes:
  - Canada:
    - exports, 228
    - imports, 228
  - Czechoslovakia:
    - production, 233
    - exports, 147, 151
      - European Economic Community countries, 182
    - worldwide, 172
  - France:
    - exports, 221

    imports, 221
    production, 214
  India:
    exports, 229
    production, 229
  Germany:
    exports, 192
    imports, 193, 196
    production, 191
  imports, 126, 147
      European Economic Community countries, 180
      worldwide, 171
  Japan:
    exports, 200, 201, 202, 204
    imports, 200, 202, 205
    production, 200, 202
  military prime contract awards for, 120
  Netherlands:
    exports, 227
    imports, 227
  production:
    worldwide, 170
  shipments, 92, 96, 97, 98 105, 106
    value of, 119
  Spain:
    exports, 214
    imports, 214
  Sweden:
    exports, 224
    imports, 224
    production, 224
  Taiwan:
    consumption, 229
    exports, 229, 231, 232
    imports, 229, 230
    production, 229
  U.S. exports, 142, 144
    manufacturers, 157, 158
  U.S. imports of, 131, 132
  United Kingdom:
    exports, 210, 211
    imports, 212, 213
    shipments, 208, 209
Latin America:
  capital expenditures, 14
  direct foreign investments in, 13
  machinery:
    imports, 239
  U.S. investment in, 47
Layoff rate:
  manufacturing, 29
Layoffs, ix-x
Leading indicators, x
Lebanon:
  machine tools:
  imports, France, 219
Loans:
  interest rates on, 23
Luxembourg:
  gross national product:
    tax revenue as percent of, 58
Libya:
  machine tools:
    imports, Italy, 222

—M—

Machinery:
  capacity utilization, 25, 26
Machinery and equipment industries, xi
Machinery, except electrical:
  see Nonelectrical machinery
Machine tools, x-xi
  balance of trade, 12
  capital expenditures, 18
  consumption, 126, 127
    durable goods industries, 17
  cost of material, 62
  definition, 1, 59, xi
  employees, 62, 64, 69
  establishments, 62, 64, 69
  inventories, 72
  location of, 60-61, 64
  materials consumed by, 73, 74
  military prime contract awards for, 120
  national economy and, 4, 5
  new orders, 33, 36
  number of companies, 69
  producer price indexes, 38, 41

shipments, 1, 4, 5, 34, 35, 40, 42, 84-86
  by numerically controlled, 100-101
  by type of machine, 92
  by value of machine, 93
size of, 60
unfilled orders, 33, 37
in use, 266, 267, 268, 269, 270
  metalworking industries, 266-271
users, 1
value added by manufacturer, 62, 64
value of shipments, 62, 64
see also Exports; Imports; Metal cutting machine tools; Metal forming machine tools; Shipments; specific countries
Machining centers:
  exports, 153
  imports, 153
  Japan:
    exports, 200, 201, 202
    imports, 200, 202
    production, 200, 202
  military prime contract awards for, 120
  shipments, 101, 111
  Taiwan:
    consumption, 229
    exports, 229, 231, 232
    imports, 229, 230
    production, 229
  United Kingdom:
    shipments, 207, 208
  U.S. imports of, 132, 133
Major users, see specific industry groups
Man-hours, xi
Manual presses:
  military prime contract awards for, 120
Manufacturing industries:
  capital expenditures, 15
  shipments, 4, 5
  U.S. investment in foreign, 47
Manufacturers:
  inventories, 31
  new orders of, 32, 33
  shipments of, 34
  unfilled orders of, 32, 33
  see also Orders; Shipments
Manufacturers' export shipments, see Exports
Market category, see Defense; Equipment industries; specific industry groups
Market shares, xii
  exports, 173-179
Materials, xii
  cost of, 62, 63
  machine tool industry, 38, 73
  metal cutting industry, 73
  metal forming industry, 73
Mechanical presses:
  France:
    exports, 221
    imports, 221
  Germany:
    exports, 192, 195
    imports, 193, 197
    production, 191
  Japan:
    exports, 199
    imports, 199
    production, 199
  military prime contract awards for, 120
    shipments, 115
    U.S. exports, 143, 145
      manufacturers, 157, 158
  in use, 270
Metal container-making machines:
  U.S. exports, 143, 145
Metal cutting machine tools:
  cancellations, 79
  capital expenditures, 260
  compensation, 246, 247
  cost of materials, 63
  coverage ratio in, 59
  employees, 63, 65, 67, 70
  employment, 241
  establishments, 63, 65, 67, 70

foreign trade, 124
Germany:
exports, 193
imports, 194
imports, 126
location, 65, 67
by machine, 131, 133
materials consumed by, 73, 74
new orders, 78, 79, 82-83, 88-91
number of companies, 70
primary specialization ratio, 59
producer price indexes, 38, 41
production, 1
worldwide, 163
products of, 73
shipments, 42, 77, 82-87
by class of product, 96-97
by type of machine, 92
value of, 119
by value of machine, 93-94
total machine tools in use, 268
unfilled orders, 79
U.S. imports of, 132
in use, 266, 267
value added by manufacturer, 63, 65, 67
value of shipments, 63, 65, 67
see also Machine tools: Numerically controlled metal cutting machine tools; Production; specific classes of products; specific countries; specific metal cutting tools
Metal forging stamping machinery and parts:
Canada:
imports, 228
Metal forming machine tools:
cancellations, 79
cost of materials, 63
coverage ratio in, 59
employees, 63, 66, 68, 71
employment, 241
establishments, 63, 66, 68, 71
foreign trade, 125
Germany:
exports, 192
imports, 193
imports, 126
location of, 66, 68
by machine, 131, 133
materials consumed by, 73, 74
new orders, 78, 79, 82-83, 88-91
number of companies, 71
primary specialization ratio, 59
producer price indexes, 38, 41
production:
worldwide, 163
products, 73
shipments, 42, 77, 82-87, 113, 117
by types of machine, 92, 98-99
value of, 119
by value of machine, 93, 95
total machine tools in use, 266
unfilled orders, 79
in use, 268, 269
value added by manufacturer, 63, 66, 68
value of shipments, 63, 66, 68
see also Machine tools; Production; specific countries; specific metal forming machine tools
Metal furniture:
machine tools:
in use, 268
Metalworking industry, 267, xii
capacity utilization, 26
compensation, 246, 247
machine tools in use, 266, 267
new orders, 36
overtime hours, 254
price deflators, 7
producer price indexes, 38
shipments, 35
unfilled orders, 37
in use, 270
Metalworking presses:
Canada:
exports, 228
imports, 228
Mexico:
gross domestic product, 44
imports, 176

    machine tools:
      exports, 165, 166
      Czechoslovakia, 234
      Spain, 215
      Switzerland, 226
    imports, 165, 166
      Czechoslovakia, 234
      France, 219
      Spain, 215
      Switzerland, 226
      United Kingdom, 209
    production, 165, 166
  metal cutting machine tools:
    imports, Germany, 194
  metal forming machine tools:
    imports, Germany, 195
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
Middle East:
  U.S. investment in, 47
Military contract awards:
  for machine tools, 120
Milling machines:
  Canada:
    imports, 228
  Czechoslovakia:
    production, 233
  exports, 152
    worldwide, 172
  France:
    exports, 221
    imports, 221
    production, 216, 217
  Germany:
    exports, 192, 194
    imports, 193, 196
    production, 191
  imports, 127, 153
      European Economic Community, 182
      worldwide, 171
  Japan:
      exports, 200, 201, 202, 204
      imports, 200, 202, 205
      production, 201, 202
  military prime contract awards for, 120
  Netherlands:
    exports, 227
    imports, 227
  production:
    worldwide, 170
  shipments, 92, 96, 97, 101, 112
    value of, 119
  Spain:
    exports, 214
    imports, 214
  Sweden:
    exports, 224
    imports, 224
    production, 224
  Taiwan:
    consumption, 229
    exports, 229, 231, 232
    imports, 229, 230
    production, 229
  United Kingdom:
    exports, 210, 211
    imports, 212, 213
    shipments, 207, 208
  U.S. exports, 142, 144
    manufacturers, 157, 158
  U.S. imports of, 131, 132
  in use, 270
Mining:
  U.S. investment in foreign, 47
Motor vehicles, xii-xiii
  capacity utilization, 25, 26
  capital expenditures, 15, 18
  compensation, 246, 247
  inventories, 31
  production indexes, 27
  shipments, 34
Multifunction machines:
  in use, 270

—N—

National defense purchases:
  actual and projected, 7
Net assets, 22
Net income, ix
Net new orders, xiii-xiv
Net operating profit, ix

Net profit on sales, ix
Net sales, 261, xv
Net value:
  of property, plant, and equipment, 22
Netherlands:
  cost recovery allowable for tax purposes, 56, 57
  gross national product:
    tax revenue as percent of, 51
  investment patterns, 45
  machine tools:
    exports, 165, 166, 168, 169, 224
      Czechoslovakia, 234
      France, 220
      Italy, 222
      Spain, 215
      Sweden, 225
      Switzerland, 226
      United Kingdom, 209
    imports, 165, 166, 168, 169, 227
      Czechoslovakia, 234
      France, 219
      Italy, 222
      Spain, 215
      Sweden, 225
      Switzerland, 226
      United Kingdom, 209
    production, 165, 166, 168, 169
  metal cutting machine tools,
    exports, 172
      Germany, 194, 196
    imports, 171
      Japan, 203
    production, 170
  metal forming machine tools:
    exports, 172
      Germany, 197
    imports, 171
      Germany, 196
    production, 170
  U.S. exports:
    machine tools, 136
    metal cutting machine tools, 138
    metal forming machine tools, 140
  U.S. imports:
    cutting machine tools, 129
    machine tools, 128
New orders:
  consumer goods, 29
  machine tools, 36
    France, 218
    United Kingdom, 206
  numerically controlled machine tools:
    United Kingdom, 207
  of manufacturers, 32, 33
  metal cutting tools, 78, 79, 82-83, 88-91
  metal forming tools, 78, 79, 82-83, 88-91
  metalworking machinery, 36
New Zealand:
  direct foreign investments in, 13
  machine tools:
    exports, Sweden, 225
    imports, Sweden, 225
  U.S. exports:
    machine tools, 137
    metal cutting, 139
    metal forming, 141
    U.S. investment in, 47
Nondefense:
  inventories, 31
  new orders, 32
  shipments, 34
  unfilled orders, 32
Non-durable goods:
  defense purchases, 39
Non-electrical machinery, xiii
  capital appropriations and backlog of, 20
  capital expenditures, 15, 18
  compensation, 246, 247
  gross book value of depreciable assets, 21
  inventories, 31
  machine tools:
  in use, 267, 268
  net value of property, plant,
      and equipment, 22
  new orders, 33
  new projects, 15
  overtime hours, 254
  production indexes, 27
  shipments, 34

- unfilled orders, 33
- in use, 271

Nonhydraulic presses:
- exports:
  - European Economic Community countries, 183
- imports:
  - European Economic Community countries, 181

Nonhydraulic shearing machines:
- exports:
  - European Economic Community countries, 183
- imports:
  - European Economic Community countries, 181

North America:
- exports, taiwan, 231
- U.S. exports:
  - machine tools, 136
  - metal cutting machine tools, 138
  - metal forming machine tools, 141
- see also specific countries

Norway:
- machine tools:
  - exports, 168, 169
    - Czechoslovakia, 234
    - France, 220
    - Sweden, 225
  - imports, 168, 169
    - Czechoslovakia, 234
    - Sweden, 225
  - production, 167, 169
- metal cutting machine tools:
  - exports, 172
  - imports, 171
    - Germany, 194
    - Japan, 203
  - production, 170
- metal forming machine tools:
  - exports, 172
  - imports, 171
    - Germany, 195
  - production, 170
- U.S. exports:
  - machine tools, 136
  - metal cutting machine tools, 138
  - metal forming machine tools, 140
- U.S. imports:
  - machine tools, 128

Numerical controls (NC), xiii

Numerically controlled machine tools (N/C):
- French production and exports of, 215
- shipments, 100-102
- unfilled orders, 100-102
- in use, 271

Numerically controlled metal cutting machine tools:
- imports, 126
- Japan:
  - production, 202
  - trade with U.S., 202

—O—

Oceania:
- U.S. exports:
  - machine tools, 137
  - metal cutting machine tools, 139
  - metal forming machine tools, 141
- see also specific countries

OPEC:
- trade, 52

Operating profit: 261

Operating profit, ix

Orders, xiii-xiv
- see also New orders

Ordnance and accessories:
- machine tools:
  - in use, 268
- except vehicles and guided missiles, xiv
- in use, 271

Output, see Productivity

Overtime, viii

—P—

Pacific:
- capital expenditures, 14
- U.S. investment in, 47
- see also specific countries

Pakistan:
- machine tools:
  - exports, Switzerland, 226

    imports, Switzerland, 226
Payroll, 251, 252, xiv
  metal cutting machine tool industry, 245, 246
  metal working machine tool industry, 245
People's Republic of China:
  machine tools:
    exports:
      Czechoslovakia, 234
      Switzerland, 226
    imports:
      Czechoslovakia, 234
      France, 219
      Italy, 222
      Switzerland, 226
  metal cutting machine tools:
    imports:
      Germany, 194
      Japan, 203
  metal forming machine tools:
    imports, Germany, 195
  U.S. trade with, 52
  see also China
Personal consumption expenditures, 6
  price deflators, 7
Peru:
  machine tools:
    exports, Czechoslovakia, 234
    imports, Czechoslovakia, 234
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
Petroleum:
  U.S. investment in foreign, 47
Philippines:
  metal cutting machine tools:
    imports, Japan, 203
  U.S. exports:
    machine tools, 137
    metal cutting machine tools, 139
    metal forming machine tools, 141
Piercing machines:
  imports:
    European Economic Community countries, 182
Planing machines:
  exports:
    European Economic Community countries, 182
  imports:
    European Economic Community countries, 180, 181
  Japan:
      exports, 200, 201
      imports, 200, 205
      production, 200
  military prime contract awards for, 120
  Spain:
    exports, 214
    imports, 214
  Taiwan:
    consumption, 229
    exports, 229, 231, 232
    imports, 229, 230
    production, 229
  U.S. exports, 142, 144
  in use, 270
Planers and shapers:
  Sweden:
    exports, 224
    imports, 224
    production, 224
Planing, shaping and broaching machines:
  Germany:
    exports, 192
    imports, 193
    production, 191
Planing, shaping and slotting machines:
  United Kingdom:
    shipments, 208
Plant and equipment:
  expenditures for new, xiv
    actual and projected, 7
  orders for, 29
Plate, sheet bending and forming machines:
  United Kingdom:
    shipments, 209
Poland:
  imports, 178
  machinery:

    - exports, 239
  - machine tools:
    - consumption, 163
    - exports, 165, 166
      - Czechoslovakia, 234
      - France, 220
      - Italy, 222, 223
      - Spain, 215
      - Switzerland, 226
      - United Kingdom, 209
    - imports, 165, 166
      - Czechoslovakia, 234
      - France, 219
      - Italy, 222
      - Spain, 215
      - Switzerland, 226
      - United Kingdom, 209, 239
    - production, 165, 166
  - metal cutting machine tools:
    - exports:
      - Germany, 196
      - Japan, 204
    - imports:
      - Germany, 194
      - Japan, 201, 203
    - production, 238
  - metal forming machine tools:
    - exports:
      - Germany, 197
    - imports:
      - Germany, 195
  - U.S. exports:
    - machine tools, 136
    - metal cutting machine tools, 138
    - metal forming machine tools, 140
  - U.S. imports:
    - cutting machine tools, 129
    - machine tools, 128
- Polishing machines:
  - imports, 126
    - European Economic Community countries, 180
  - shipments, 92, 96, 97, 107, 108
- Polishing (and buffing) machines:
  - in use, 270
- Portugal:
  - machine tools:
    - exports, 165, 166, 168, 169
      - France, 219
      - Spain, 215
      - Sweden, 225
    - imports, 165, 166, 168, 169
      - France, 219
      - Spain, 215
      - Sweden, 225
    - production, 165, 166, 168, 169
  - metal cutting machine tools:
    - exports, 172
    - imports, 171
      - Germany, 194
    - production, 170
  - metal forming machine tools:
    - exports, 172
    - imports, 171
      - Germany, 195
    - production, 170
  - U.S. exports:
    - machine tools, 136
    - metal cutting machine tools, 138
    - metal forming machine tools, 140
- Power shearing:
  - U.S. exports:
    - manufacturers, 157, 158
- Precision instruments, ix, xiv
  - machine tools:
    - in use, 268, 271
- Presses:
  - Czechoslovakia:
    - production, 233
  - exports:
    - European Economic Community countries, 183
    - worldwide, 172
  - France:
    - exports, 221
    - imports, 221
    - production, 216, 217
  - India:
    - exports, 229
    - production, 229
  - imports:
    - European Economic Community countries, 181
    - worldwide, 171
  - mechanical:
    - shipments, 115

  Netherlands:
      exports, 227
      imports, 227
  production:
      worldwide, 170
  shipments, 92, 98, 99
      value of, 119
  Spain:
      exports, 214
      imports, 214
  Sweden:
    exports, 224
    imports, 224
    production, 224
  Taiwan:
    consumption, 229
    exports, 229, 231, 232
    imports, 229, 230
    production, 229
  United Kingdom:
    shipments, 209
  U.S. exports, 155
    manufacturers, 159
  U.S. imports, 126, 133
Price deflators, 7
  actual and projected, 7
  defense purchases, 39
Price index, xiv-xv
  producer, 38
    machine tools, 41
Prices:
  change in sensitive, 29
Primary metals:
  capacity utilization, 25
  inventories, 31
  machine tools:
    in use, 268
  new orders, 32
  production indexes, 27
  shipments, 34
  unfilled orders, 32
  in use, 271
Primary products, xv
Primary specialization ratio, 59
Private investment:
  gross domestic, 6
  gross national product and, 10, 11
Producer price indexes:
  machine tool, 38
Producers' durable equipment, xv
  price deflators, 7
Production:
  machine tools:
    worldwide, 162, 163, 165, 166, 167
  metal cutting machine tools:
    worldwide, 169, 170
  metal forming machine tools:
    worldwide, 169, 170
Production workers, xv
Productivity, 28, 258, xv
  worldwide, 54, 55
  see also Industrial production
Profit, 7, 8, 262, 263, ix
Public utilities:
  new projects, 15
Punching machines:
  imports:
    European Economic Community countries, 181
  shipments, 92, 98, 99, 117,
    value of, 119
  U.S. imports, 134
Punching and shearing machines:
  exports:
    worldwide, 172
  France:
    production, 217
  imports:
    worldwide, 171
  military prime contract awards for, 120
  production:
    worldwide, 170
  Sweden:
    exports, 224
    imports, 224
    production, 224
  United Kingdom:
    shipments, 209
  U.S. imports, 126
  U.S. exports, 143, 145, 155
    manufacturers, 159
  in use, 270
Punching, shearing, bending and forming machines:

  France:
    exports, 221
    imports, 221
Punching and stamping machines:
  exports:
    European Economic Community
      countries, 183
  imports:
    European Economic Community
      countries, 183

—R—

Real Gross National Product
  (GNP), xv
Republic of Korea:
  imports, 175
  metal cutting machines:
    imports, Japan, 201, 203
  U.S. exports:
    metal forming machine tools, 141
  see also Korea; Korea, Republic of
Republic of South Africa:
  machine tools:
    exports:
      Italy, 222, 223
    imports:
      France, 219
      Italy, 222, 223
  metal cutting machine tools:
    imports:
      Germany, 194
  metal forming machine tools:
    imports:
      Germany, 195
  U.S. exports:
    machine tools, 137
    metal cutting machine tools, 139
    metal forming machine tools, 141
  see also South Africa
Riveting machines:
  military prime contract awards
    for, 120
  United Kingdom:
    shipments, 209
  in use, 270
Rolling machines:
  imports:
    European Economic Community
      countries, 181
Rolling (bending, folding and
  planing) machines:
  exports:
    European Economic Community
      countries, 183
Rolls, bending machines and parts:
  Canada:
    imports, 227
Romania:
  imports, 178
  machinery:
    exports, 239
  machine tools:
    consumption, 163
    exports, 165, 166
      Czechoslovakia, 234
      France, 220
      Italy, 222
      Spain, 215
    imports, 165, 166
      Czechoslovakia, 234
      France, 219
      Italy, 220
      Spain, 215
      United Kingdom, 209
    production, 165, 166
  metal cutting machine tools:
    exports:
      Germany, 192
    imports:
      Germany, 194
      Japan, 201, 203
    production, 238
  metal forming machine tools:
    exports:
      Germany, 197
    imports:
      Germany, 195
  U.S. exports:
    machine tools, 136
    metal cutting machine tools, 138
    metal forming machine tools, 140

—S—

Salary, see Compensation
Sales, 260, xv
Sales, net, total, xv

Saudi Arabia:
  gross domestic product, 44
  imports, 177
Sawing machines:
  Canada:
    imports, 228
  imports:
    European Economic Community
      countries, 180
  Taiwan:
    consumption, 229
    exports, 229, 231, 232
    imports, 229, 230
    production, 229
  U.S. imports of, 132
Sawing (and cut-off) machines:
  India:
    exports, 229
    production, 229
  imports:
    European Economic Community
      countries, 180, 182
  shipments, 109-110
  United Kingdom:
    shipments, 208
  U.S. exports, 142, 144
    manufacturers, 158
Saws (and filing) machines:
  Germany:
    exports, 192, 194
    imports, 193, 196
    production, 191
  military prime contract awards
    for, 120
Scheduled weekly hours, viii
Screwing and tapping machines:
  exports:
    European Economic Community
      countries, 183
  imports:
    European Economic Community
      countries, 182
Screwing and threading machines:
  India:
    exports, 229
    production, 229
  United Kingdom:
    shipments, 208
Seasonally adjusted, xv
Secondary products, xv
Shapers:
  shipments, 109-110
  U.S. exports, 142, 144
  in use, 269
Shapers, gear makers and parts:
  Canada:
    imports, 227
Shaping and slotting machines:
  exports:
    European Economic Community
      countries, 182
  India:
    exports, 229
    production, 229
  imports:
    European Economic Community
      countries, 180
Shearing machines:
  Canada:
    imports, 227
  Germany:
    production 191
  imports:
    European Economic Community
      countries, 181
  Japan:
    exports, 199
    imports, 199
    production, 199
  military prime contract awards
    for, 120
  shipments, 92, 98, 99, 117
    value of, 119
  U.S. imports of, 133
Shearing (punching and stamping)
  machines:
  exports:
    European Economic Community
      countries, 183
Sheet metalworking machines:
  Germany:
    exports, 192, 195
    imports, 183, 197
    production, 191
Shift differential, iv, xv
Shipments, 4, 5

- automatic mechanical metalworking machinery, 101
- bending and forming machines, 116
- boring machines, 92, 96, 97, 103
- broaching machines, 109-110
- drilling machines, 92, 96, 97, 104
- forging machines, 118
- gear cutting and finishing machines, 92, 96, 97, 103
- grinding and finishing machines, 92, 96, 97, 107-108
- grinding and polishing machines, 107-108
- hydraulic and pneumatic metalworking presses, 115
- lathes, 92, 96, 97, 105-106
- machine tool industry, 64
  - France, 216
- machine tools, 35, 40, 42
  - leading nations, 164
  - United Kingdom, 206
- machining centers, 111
- of manufacturers, 34
- mechanical presses, 116
- metal cutting machine tool industry, 63, 65, 67
- metal cutting machine tools, 77
- metal forming machine tool industry, 63, 66, 68
- metal forming machine tools, 114
- metalworking machinery, 35
- milling machines, 92, 96, 97, 112
- numerically controlled machine tools, 100-102
- punching machines, 117
- sawing and cutoff machines, 109-110
- shapers, 109-110
- shearing machines, 117
- United Kingdom:
  - metal cutting machine tools, 207
  - metal forming machine tools, 209
  - numerically controlled machine tools, 207
- value of:
  - machine tool industry, 62, 63
- see also Machine tools; Metal cutting machine tools; Metal forming machine tools

Shipments - complete machine tools - MQ-35W, xvi

Shipments - complete machine tools - NMTBA, xvii

Shipments - major users and major user categories, xvii

Shipments - total - census, xvi

Singapore:
- machine tools:
  - exports, 165, 166
  - imports, 165, 166
    - United Kingdom, 2O9
  - production, 165, 166
- metal cutting machine tools:
  - exports:
    - Japan, 204
  - imports:
    - Germany, 194
    - Japan, 203
- metal forming machine tools:
  - imports:
    - Germany, 195
- U.S. exports:
  - machine tools, 137
  - metal cutting machine tools, 139
  - metal forming machine tools, 141

Smelting:
- U.S. investment in foreign, 47

South Africa:
- capital expenditures, 14
- direct foreign investments in, 13
- machine tools:
  - exports, 165, 166
    - Spain, 214
    - Sweden, 225
    - Switzerland, 226
  - imports, 165, 166
    - Spain, 215
    - Sweden, 225
    - Switzerland, 226
    - United Kingdom, 210, 211
  - production, 165, 166
- metal cutting machine tools:
  - imports:
    - Japan, 203

  - U.S. investment in, 47
  - see also Republic of South Africa
- South America:
  - metal cutting machine tools:
    - imports:
      - Germany, 194
  - U.S. exports:
    - machine tools, 136
    - metal cutting machine tools, 138
    - metal forming machine tools, 140
  - see also specific countries
- South Korea:
  - machine tools:
    - imports:
      - United Kingdom, 209
  - metal cutting machine tools:
    - imports:
      - Germany, 194
  - metal forming machine tools:
    - imports:
      - Germany, 195
- Soviet Union:
  - machine tools:
    - exports, 165, 166
    - imports, 165, 166
    - production, 165, 166
    - shipments, 164
  - see also U.S.S.R.
- Spain:
  - gross domestic product, 44
  - imports, 175
  - investment patterns, 45
  - machine tools:
    - consumption, 163
    - exports, 165, 166, 168, 169 214, 215
      - Czechoslovakia, 234
      - France, 220
      - Italy, 222
      - Netherlands, 227
      - Sweden, 225
      - Switzerland, 226
      - United Kingdom, 209
    - imports, 165, 166, 168, 169, 214, 215
      - Czechoslovakia, 234
      - France, 219
      - Italy, 222
      - Netherlands, 227
      - Sweden, 225
      - Switzerland, 226
      - United Kingdom, 209
    - production, 165, 166, 168, 169
  - metal cutting machine tools:
    - exports, 172, 214
      - Germany, 196
    - imports, 171, 214
      - Germany, 194
    - production, 170
  - metal forming machine tools:
    - exports, 172, 214
      - Germany, 197
    - imports, 171, 214
      - Germany, 195
    - production, 170
  - U.S. exports:
    - machine tools, 136
    - metal cutting, 138
    - metal forming, 140
  - U.S. imports:
    - cutting machine tools, 129
    - machine tools, 128
- Special machines:
  - Japan:
    - production, 202
- Special way-type and transfer machines:
  - in use, 270
- Straightening machines:
  - Netherlands:
    - exports, 228
    - imports, 228
- Stockholders' equity, xvii
- Straight-time hourly earnings, v
  - see also Compensation
- Structure and additions, see Plant and equipment
- Supplementary benefits, iii-iv
- Sweden:
  - compensation, 53, 256
  - consumer prices, 48, 49
  - cost recovery allowable for tax purposes, 56, 57

- export market share of, 173-179
- gross domestic product, 44
- gross national product:
  - tax revenue as percent of, 58
- investment patterns, 45
- machine tools:
  - consumption, 163
  - exports, 165, 166, 168, 169 224-225
    - Czechoslovakia, 234
    - France, 220
    - Italy, 222
    - Netherlands, 227
    - Spain, 215
    - Switzerland, 226
    - United Kingdom, 209
  - imports, 165, 166, 168, 169 224-225
    - Czechoslovakia, 234
    - France, 219
    - Italy, 222
    - Netherlands, 227
    - Spain, 215
    - Switzerland, 226
    - United Kingdom, 209
  - production, 165, 166, 168 169, 224
- metal cutting machine tools:
  - exports, 172
    - Germany, 196
    - Japan, 204
  - imports, 171
    - Germany, 194
    - Japan, 203
  - production, 172
- metal forming machine tools:
  - exports, 172
    - Germany, 197
  - imports, 171
    - Germany, 195
  - production, 170
- productivity, 54
- U.S. exports:
  - machine tools, 136
  - metal cutting, 138
  - metal forming machine tools:140
- U.S. imports:
  - cutting machine tools, 129
  - forming machine tools, 129
  - machine tools, 128
  - wholesale prices, 49, 50

Switzerland:
- compensation, 255, 256
- export market share of, 173-179
- gross domestic product, 44
- gross national product:
  - tax revenue as percent of, 58
- imports, 174
- investment patterns, 45
- machine tools:
  - consumption, 163
  - exports, 165, 166, 167, 169, 226
    - Communist countries, 236-237
    - Czechoslovakia, 234
    - France, 220
    - Italy, 222
    - Netherlands, 227
    - Spain, 215
    - Sweden, 225
    - Taiwan, 230
    - United Kingdom, 212, 213
  - imports, 165, 166, 168, 169226
    - Czechoslovakia, 234
    - France, 219
    - Italy, 224
    - Netherlands, 227
    - Spain, 219
    - Sweden, 225
    - United Kingdom, 209
  - production, 165, 166, 168 169
- metal cutting machine tools:
  - exports, 172
    - Germany, 196
    - Japan, 204, 205
  - imports, 171
    - Germany, 194
  - production, 170
- metal forming machine tools:
  - exports, 172
    - Germany, 197
  - imports, 171
    - Germany, 195

    production, 170
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
  U.S. imports:
    cutting machine tools, 129
    forming machine tools, 129
    machine tools, 128, 134

—T—

Taiwan:
  machine tools:
    consumption, 229
    exports, 165, 166, 229, 231, 232
      France, 220
      United Kingdom, 209
    imports, 165, 166, 229, 230
      United Kingdom, 209
    production, 165, 166, 229
  metal cutting machines:
    exports, Japan, 204
    imports, Japan, 201, 203
  U.S. exports:
    machine tools, 137
    metal cutting, 139
    metal forming, 141
  U.S. imports:
    cutting machine tools, 129
    machine tools, 128
Tapping machines:
  U.S. exports, 144
  in use, 270
Tax:
  corporate profit and, 8
  cost recovery of, 56-57
  revenues:
    as percent of GNP, 58
Thailand:
  metal cutting machine tools:
    imports:
      Japan, 203
Threading machines:
  U.S. exports, 144
  in use, 270
Trade:
  balance of payments, 43
    worldwide, 53
  see also Balance of trade;
    Exports; Imports
Transfer machines:
  Canada:
    imports, 228
  U.S. exports:
    manufacturers, 158
Transfer and single station
  machines:
  United Kingdom:
    shipments, 208
Transportation equipment, xvii
  capital expenditures, 15
  gross book value of depreciable
    assets, 21
  inventories, 31
  machine tools:
    in use, 268
  net value of property, plant,
    and equipment, 22
  new orders, 33
  new projects, 15
  production indexes, 27
  shipments, 34
  unfilled orders, 33
  in use, 271
Turkey:
  imports, 176
  machine tools:
    exports:
      Czechoslovakia, 234
      Italy, 222
    imports:
      Czechoslovakia, 234
      France, 219
      Italy, 222
      United Kingdom, 209
  U.S. exports:
    machine tools, 137
    metal cutting machine tools,
      139
    metal forming machine tools,
      141
Turning machines:
  in use, 270
Turret lathes:
  Germany:
    exports, 194

    machine tools, 136
    metal cutting machine tools, 138
    metal forming machine tools, 140
  U.S. imports:
    cutting machine tools, 129
    forming machine tools, 129
    machine tools, 128, 134
  U.S. investment in, 47
  wholesale prices, 49, 50
United States:
  balance of trade, 53
  compensation, 53, 55, 255, 256
  consumer prices, 48, 49
  cost recovery allowable for tax purposes, 56, 57
  export market share of, 173-179
  exports:
    financing, 46
    unit value of, 51
  foreign investment, 47
  gross domestic product, 44
    tax revenue as percent of, 58
  imports, 173
    percent of domestic consumption, 188
  industrial production, 47
  investment patterns, 45
  machinery:
    imports, 239
  machine tools:
    consumption, 163
    exports, 165, 166, 168, 169
      Communist countries, 236-237
      Czechoslovakia, 234
      France, 220
      Italy, 222
      Netherlands, 227
      Spain, 215
      Sweden, 225
      Switzerland, 226
      Taiwan, 230
      United Kingdom, 212, 213
    imports, 165, 166, 168, 169
      Czechoslovakia, 234
      France, 219
      Italy, 222
      Netherlands, 227
      Spain, 215
      Sweden, 225
      Switzerland, 226
      United Kingdom, 209, 210, 211
    production, 165, 166, 168, 169
    shipments, 164
    in use, 267
  metal cutting machine tools:
    exports, 172
      Germany, 195
      Japan, 205
    imports, 171
      Germany, 194
      Japan, 201, 203, 204
    production, 170, 238
  metal forming machine tools:
    exports, 172
      Germany, 197
    imports, 171
      Germany, 195
    production, 170, 235
  productivity, 54, 55
  trade, 52
  wholesale prices, 49, 50
U.S.S.R.:
  gross national product, 44
  industrial production, 235
  machinery:
    exports, 239
  machine tool industry:
    production, 235
  machine tools:
    consumption, 163
    exports:
      Czechoslovakia, 234
      France, 220
      Italy, 222
      Spain, 215
      Switzerland, 226
    imports:
      Czechoslovakia, 234
      France, 219
      Italy, 222
      Spain, 215
      Switzerland, 226
      United Kingdom, 209, 210
  metal cutting machine tools:
    exports:

      Germany, 196
      Japan, 204, 205
    imports:
      Germany, 194
      Japan, 201, 203
    production, 234, 235
  metal forming machine tools:
    exports:
      Germany, 197
    imports:
      Germany, 195
    production, 238
  trade, 51
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140
  U.S. trade with, 52
  see also Soviet Union
Utilities, public:
  new projects, 15

—V—

Vacations, paid, iii-iv
Value added, xviii
Value added per employee:
  metal cutting machine tool industry, 253
  metal forming machine tool industry, 253
Value added by manufacturer:
  machine tool industry, 62, 63, 64
  metal cutting machine tool industry, 63, 65, 67
  metal forming machine tool industry, 63, 66, 68
Value, in foreign country, see imports into U.S.
Value, at port, see Exports of domestic merchandise
Value of shipments, see Shipments
Venezuela:
  imports, 176
  machine tools:
    exports:
      Czechoslovakia, 234
      Italy, 222
      Spain, 215
    imports:
      Czechoslovakia, 234
      France, 219
      Italy, 222
      Spain, 215
  metal cutting machine tools:
    imports:
      Germany, 194
  metal forming machine tools:
    imports:
      Germany, 195
  U.S. exports:
    machine tools, 136
    metal cutting, 138
    metal forming, 140

—W—

Wages, see Compensation
Western Europe:
  direct foreign investments in, 13
  metal cutting machine tools:
    imports:
      Germany, 194
  U.S. investment in, 47
  see also specific countries
West Germany:
  balance of trade, 53
  compensation, 53, 55, 255, 256
  consumer prices, 48, 49
  cost recovery allowable for tax purposes, 56, 57
  export market share of, 173-179
  exports:
    financing, 46
    unit value of, 51
  gross domestic product, 44
    tax revenue as percent of, 58
  imports, 173
    percent of domestic consumption, 188, 189
  industrial production, 47
  investment patterns, 45
  machine tool industry:
    employees, 190
    exports, 190
    imports, 190

  - production, 190, 191
- machine tools:
  - consumption, 163
  - exports, 165, 166, 168, 169 182, 183
    - Communist countries, 236, 237
    - Czechoslovakia, 234
    - France, 220
    - Italy, 222
    - Netherlands, 227
    - Spain, 215
    - Sweden, 225
    - Switzerland, 226
    - Taiwan, 230
    - United Kingdom, 212, 213
  - imports, 165, 166, 168, 169 180, 181
    - Czechoslovakia, 234
    - France, 219
    - Italy, 222
    - Netherlands, 227
    - Spain, 215
    - Sweden, 225
    - Switzerland, 226
    - Taiwan, 232
    - United Kingdom, 209, 210, 211
  - production, 165, 166, 168, 169
  - shipments, 164
  - in use, 267
- metal cutting machine tools:
  - exports, 172, 192, 194
    - Japan, 204, 205
  - imports, 171, 193, 196
    - Japan, 201, 203
  - production, 170, 191
- metal forming machine tools:
  - exports, 172, 192, 195
  - imports, 171, 193, 197
  - production, 170, 191
- productivity, 54, 55
- trade, 52
- U.S. exports:
  - machine tools, 136
  - metal cutting, 138
  - metal forming, 140
- U.S. imports:
  - cutting machine tools, 129
  - forming machine tools, 129
  - machine tools, 128, 134
- U.S. investment in, 47
  - wholesale prices, 49, 50
- West Samoa:
  - machine tools:
    - exports, Sweden, 225
    - imports, Sweden, 225
- Wholesale prices:
  - worldwide, 49, 50
- Wire drawing machines:
  - France:
    - exports, 221
    - imports, 221
- Wire forming machines:
  - Japan:
    - exports, 199
    - imports, 199
    - production, 199
- Wire, strip drawing and working machines:
  - United Kingdom:
    - shipments, 209
- Wire working machines:
  - Germany:
    - exports, 192, 195
    - imports, 193, 197
    - production, 191
- Working capital, 261
- World trade, see Exports; Imports; and specific countries

—Y—

- Yugoslavia:
  - imports, 178
  - machine tools:
    - consumption, 163
    - exports, 165, 166
      - Czechoslovakia, 234
      - France, 219
      - Switzerland, 226
    - imports, 165, 166
      - Czechoslovakia, 234
      - France, 220
      - Switzerland, 226
    - production, 165, 166
  - metal cutting machine tools:
    - exports:
      - Germany, 196

  imports:
    Germany, 194
metal forming machine tools:
  exports:
    Germany, 197
  imports:
    Germany, 195
U.S. exports:
  machine tools, 136
  metal cutting, 138
  metal forming, 140

  imports:
    Germany, 194
metal forming machine tools:
  exports:
    Germany, 197
  imports:
    Germany, 195
U.S. exports:
  machine tools, 136
  metal cutting, 138
  metal forming, 140

Précis: The need for comprehensive, truly regional manufacturing technology shows is apparent. Two years ago, NMTBA formed a special committee to research and study the effectiveness of industrial shows. The study revealed the need to provide geographically broader, truly regional shows to enhance other marketing efforts. The findings were affirmative, given these conditions: that any NMTBA-sponsored show be handled in all aspects with the same professionalism that has made our biennial International Machine Tool Show what it is today; that it attract visitors from throughout a four-hundred-mile radius; and finally, "that it had damn well better be successful for both visitors and exhibitors."

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